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Genesse Valley, N. Y. Colonial Work. Drawn by Claude F. Bragdon, 969 (Int.). Genesse Valley, N. House for Wendell & Smith. Price & Kirk, Architects, 370 (Int.)
Germantown, Pa. House for Wendell & Smith. Price & Kirk, Architects, 370 (Int.)
Germantown, Pa. House for Wendell & Smith. Price & Kirk, Architects, 370 (Int.)
Great Barrington, Mass. Stable of E. F. Searles, 977 (Int.)
Great Barrington, Mass. Stable of E. F. Searles, 977 (Int.)
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Great Barrington, Mass. Stable of E. F. Searles, 977 (Int.)
Great Barrington, Mass. Stable of E. F. Burnham. Hapgood & Hapgood, Archts., 976 (Int.)
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Henry Ball, Architect, 967 (Int.)
Horsham, Eng. Competitive Design for Dining-hall, Christ's Hospital New Boarding-schools. T. E. Colleutt, Architect, 973 (Int.) London, Eng. : -Battersea Polytechnic. E. W. Mount-ford, Architect, 971, 972 (Int.)
Entrance and Tower, Northampton Institute. E. W. Mountford, Archt., 968 (Int.)
London and Southwestern Bank, Truefitt & Watson, Architects, 979 (Int.) org. Cope & Stewarucc..., 975 (Reg.) Ragusa, Austria. Sketches, 968, 970, 974 (Int.)
Reading, Eng. School Board Offices.
Charles Smith & Son, Architects, 969)
ase, Foreign Offices. Sir G. G.
Scott, Architect, 968 (Int.)
Imperial Institute. T. E.
Colleutt, Archt., 968 (Int.)
Chambers. Ernest Runtz, Charles Smith & Son, Architect, (Int.)
(Int. Colleutt, Archt., 968 (Int.)
Tudor Chambers. Ernest Runz,
Architect, 970 (Int.)
Malden, Mass. High School, F. I.
Cooper, Architect, 974 (Ireg.)
Midlothian, Scotland. "Glen Lodge."
J. G. Fairley, Architect, 979 (Int.)
Minneapolis, Minn. Imperial Apartments.
H. W. Jones, Architect, 975 (Reg.) Aaron H. Gould,
A rchitect, 969
(Reg.)

"City Stables. Aaron
H. Gould, Archt.
H. Gould, Archt.
972 (Reg.)
Spring field, Mass. Dwight House.
Drawn by G. C. Gardner, 977 (Reg.)
Surbiton, Eng. House. R. Lano
Pearce, Architect, 967 (Int.)
Tenatly, N. J. House of Dr. J. B. W.
Lansing. Frank T. Cornell, Archt.,
971 (Reg.)
Toronto, Can. Union Station. Strickland & Symons, Architects, 970
(Reg.) ments. H. W. Jones, Architect, 975 (Reg.)
forristown, N. J. House of Miss Van Winkle. Jardine, Kent & Jardine, Architects, 971 (Reg.)
Seath, Wales. London and Provincial Bank. Wilson & Moxham, Architects, 978 (Int.) Carriage Entrance, House of C. P. Huntington. George B. Post, Architect, 988 (Imp.)

Fireplace in House of H. L. Einstein. M. N. Gutter, Architect, 973 (Imp.)

Hooper Fountain. G. M. Huss, Architect, 969 (Imp.)

House of Cornelius Vanderbilt. Geo.

B. Post, Architect, 971 (Imp. and Int.)

"Elbridge T. Gerry. R. M. Hunt, Archt., 974 (Imp.)

Houses of Mrs. Miller and Mrs. Mc. Gucken. C. P. H. Gilbert, Archt., 967 (Imp.)

Main Entrance, Temple Beth-el. Brunner & Tryon, Architects, 978 (Imp.) NEW YORK, N. Y.:-771 (Reg.)
Toronto, Can. Union Station. Strickland & Symons, Architects, 970 (Reg.)
Troy, N. Y. Competitive Design for Y. M. C. A. Building. F. R. Comstock, Architect, 976 (Reg.)
Truro, Eng. House. Sampson Hill, Architect, 976 (Reg.)
Warwick, N. Y. Stable for W. S. Johnson, E. G. W. Dietrich, Architect, 976 (Reg.)
Washingtonville, N. Y. Hall in House of Miss E. A. Hallock. E. G. W. Dietrich, Architect, 976 (Reg.)
Wells, Eng. Bishop's Barn. Drawn by A. B. Bibb, 974 (Int.)
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Williamstown, Mass. Coach man's House, Gardener's Cottage and Barn for E. R. Vall. F. R. Comstock, Architect, 967 (Reg.)
Worcester, Eng. Interior, Church of St. George. Aston Webb, Architect, 967 (Reg.)
Worcester, Eng. Interior, Church G. St. George, Aston Webb, Architect, 978 (Int.)
"Mass. Peck School. Geo. H. Clemence, Architect, 972 (Reg.)
Wrexham, Eng. House. T. G. Williams, Architect, 969 (Int.)
Zürleh, Switzerland. Post and Telegraph Building. Von Chiodera & Tschudy, Architects, 978 (Reg.) Brunner & Tryon, Architects, 978 (Imp.)
Trinity School. C. C. Haight, Archt., 977 (Reg.)
Norfolk, Va. Houses at Ghent. W. J. Marsh, Architect, 970 (Reg.)
Northampton, Mass. House for Smith College. W. C. Brocklesby, Archt., 975 (Reg.)
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Ottawa, Can. House of Hayter Reed. PARIS. FRANCE : -

Monument to Barye, 968 (Int.)
"Renaudot, 968 (Int.)
Villa near. E. Lemaire, Architect,
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JULY 7, 1894.



SUMMARY: -

Houses of Mrs. Miller and Mrs. McGucken, West 76th Street, New York, N. Y.—St. Andrew's Church, Detroit, Mich.—Gardner's Cottage and Barn at Williamstown, Mass.—Château St. Agil, France.—Chimneypieces in House at Bernardsville, N. J.—A Drawing-room Mantel.—Sketch for a Cottage.

Cottage. Central Northern Porch of the Machinery Build.

Cottage.

Additional: Central Northern Porch of the Machinery Building, World's Columbian Exhibition, Chicago, Ill.—New Entrance-lodge, Dinorben Court, Hants, Eng.—An Ingle Nook.—Proposed House at Horsell, Eng.—Detached Residences at Surbiton, Eng.

TE can hardly realize the extraordinary nature of the state of things now existing in the West, without removing ourselves, by a mental effort to a little distance of time. A generation from now, our grandchildren will read, we hope with amazement, that, according to the newspapers of the period, in the year of grace 1894, General Debs, after having "completely crippled all the railroads centering in Chicago, had "transferred his base of operations to St. Louis," and it was supposed that "the next point of attack would be Cincin-In perusing the bulletins which are now appearing from day to day in all the papers, one is strongly reminded of the bulletins which, in 1870 and 1871, described the victorious excursion of Prince Frederick Charles through prostrate France, and it is hard to believe that they refer to the operations of an oath-bound organization, carried on against the commerce of this great community, in order to force compliance with certain demands, as to the nature of which the community knows little or nothing, which are said to have been made by the employés of a manufacturing corporation in Illinois. It is quite possible that those demands may have been well founded, but that they should have been so well founded as to justify plunging the country into civil war - for assaults on persons and property which involve the stoppage of business over half an empire, and the destruction of perishable goods belonging to innocent persons, to the value of millions of dollars, are nothing less than acts of war - is altogether incredible. It is not very long since the people of the Northern States were kept for months in a ferment of indignation at the destruction of private property by the Alabama, yet the damage done by Semmes and his gang of pirates was hardly greater than that which is likely to be inflicted upon innocent people by Debs and his "organizers," and it is to be remembered that Semmes at least carried the commission of a nation engaged in a desperate struggle for existence, while the railway pirates have never had a more miserable excuse for their attacks on the people and commerce of the country than in this instance.

HE truth of the story, beginning where it should be begun, seems to be that, some years ago, Mr. Pullman, the head of the great corporation which takes its name from him, conceived the idea of a manufacturing community in which every one should be healthy, happy and good, so far as external circumstances could make him so. With this view, he, and the people who worked with him, laid out and built a town, with good water-supply, good drainage, good streets, and the other advantages which, under ordinary circumstances, can be enjoyed only by the rich, or, at least, the well-to-do. In addition to this, Mr. Pullman and his friends built lecture-rooms,

laid out playgrounds, and made other provisions for the comfort and pleasure of the citizens of their new town; and, when all was ready, moved their manufactories there. At the time, it was the general comment that the Pullman Company was permanently secured against labor troubles, for no workman in his senses would voluntarily cut himself and his family off from advantages which he could find nowhere else in the world. For several years this feeling seemed to be shared by the workmen themselves, but the present paralysis of business affected the company, as it has everybody else, and it was found necessary to curtail production. According to the assertion of Mr. Pullman, which is confirmed by independent statements made long before the strike, it was found impossible to sell the cars manufactured, but the works were run at a loss, simply to give employment and wages to forty-four hundred men, who would otherwise have been unable to pay for food and shelter for their families. What the forcy-four hundred men found to object to in this arrangement has never, so far as we have read, been explained; but there have been obscure references to a "grievance," and to a refusal of Mr. Pullman to "arbitrate," followed immediately by the news of the "crippling" of fifty or sixty thousand miles of railroad, the cutting off of the entire Pacific coast from land-communication with the East and the abandonment of trains filled with passengers, or loaded with perishable freight, in the middle of their route. The flimsy pretext that this assault on the persons and property of the citizens of nearly the whole United States was perpetrated in support of the Pullman workmen was almost immediately abandoned. Hardly had the strike begun when a road was struck on which no Pullman cars were ever run. The real reason was, of course, that the conspirators were strong enough on that road to throw it into confusion without spending time in cajoling or threatening the men; but the excuse made public was that the manager had expressed sympathy with Mr. Pullman. On another road, where three or four men had refused to do their duty on trains containing Pullman cars, thereby endangering the lives of hundreds of innocent passengers, and the superintendent had simply ordered their discharge — instead of having them hung to the nearest telegraph pole, which would have been a more appropriate retribution for such a crime - a general strike was immediately ordered, to compel the reinstatement of the miserable recreants in the posts which they had treacherously abandoned. So far as accounts have been at present received, the "struggle," the projectors and leaders are pleased to call it, between the insolent mischief-makers on one side, and a great, patient and long-suffering people on the other, is growing more audacious and destructive every day, and the State and United States authorities have already been called upon for force with which to meet force.

T is to be regretted that the people of the United States I is to be regretted that the people of their ordinary highways should have to recover the use of their ordinary highways at the point of the bayonet, but it is better to recover and hold them in that way than to give up the control of them, even for a moment, to people so reckless and malicious, or so unutterably base, as those who have managed the great railroad strikes for the past ten years. The example of the Pullman strike shows how false and dangerous are the doctrines in regard to workingmen which have gained so much credit, and wrought so much misery, within the present generation. According to those doctrines, a man who works with his hands is not a man, but a babe, who must be provided with a clean house, not through the process of cleaning it with his own hands, but by having philanthropic people get up a subscription to hire some one to clean it for him; who must be amused with lectures, picture-shows and other distractions, at the expense of the public, or of amiable private persons, and whom it was right to encourage in every way to think that thrift, industry, sobriety and self-denial were no longer necessary to one so favored, and that yelling and kicking, if long enough continued, were sure to bring him everything to which he might take a fancy. The lesson has not been lost: the babe of the nineteenth century, trained by the lullabies of the political economists, the dandling of the politicians, and the patient indulgence of the more rational part of the community, to combine the greedy helplessness of the infant with the

strength and malice of the man, claws every day more viciously at what does not belong to him, and tramples more recklessly on the rights of other people. In the end, these rights must assert themselves, or perish in the worst of tyrannies; but a part of the harsh lesson by which they are defended should be reserved for the moonstruck philosophers and sentimentalists who have taught ignorant people that, instead of relying on their own exertions for improving their condition, looking out only to preserve and extend their freedom to use those exertions, they were entitled to trample on the freedom of others in order to get what they wanted.

THAT it might prove extremely profitable, at a time when the whole business community is busy looking into its private affairs, for public authorities to follow this example and overhaul matters of public morality and the behavior of public officials, seems to have occurred simultaneously to those having the power of initiative in every quarter of the country, and, as a consequence, the daily papers are now filled with the details of investigations of the most varied kinds, whose revelations of corruptness fill the guileless private citizen with amazement. These inquiries extend from an examination into the moral rectitude of United States Senators, through the conduct of the police departments in various cities, down to the manner in which those in control of State and municipal penal and charitable institutions discharge their obligations toward the helpless beings temporarily placed under their charge. Every-where there has been revealed the most astounding conditions of moral rottenness springing in all cases from the same cause. The common aim is "how to be rich, though idle," and in pursuit of this end men will seemingly shrink from no villany. The evidence of this widespread capacity for corruptibility would be disheartening enough, but the really discouraging thing that has been brought to light is the evidence of the perfection of the organization of the scamps, and the absolute want of organization on the part of the public on whom they prey. As might be expected, the very type and essence of corruption is found in Tammany Hall, with its Sagamore, Sachems, Winkiski and distinct leaders, and one cannot but admire the astuteness with which it has completed its organization, and how absolutely individuals who are unable or unwilling to fight its exactions place themselves in its power. Tammany collects, by blackmail and extortion, an annual income equal to that of the City of New York, it accepts no checks, it keeps no books, it banks no money, it deals absolutely in quick cash. Under these circumstances the citizen who pays blackmail, and seemingly all do, has no proof that he has once paid, and could as easily be compelled to pay the same "assessment" several times over as to pay it once. The first effects of publishing the details of the investigation of Tammany methods will be to hasten the perfecting in other cities than New York of the similar systems of blackmail that are already in partial operation. With the leading cities in the power of similar organizations, all it is necessary for these bands of scamps to do is to unite and by their combined resources take final and absolute possession of the central government, after which they can give the world at large an object lesson of the beauties of a government of scamps, by scamps, for scamps. Shades of Lincoln! Is it not time that decent citizens threw aside their apathy and set seriously to work to establish a stronger "organization"?

OME of the revelations in New York have been such as to especially interest architects. Thus one of their own number, a man standing high in the profession, as a sequence to an examination which no unprejudiced observer could hold to be either open or satisfactory, so far forgot himself, according to verbatim reports, as to tell the examining lawyer in open court that he was a liar. Another interesting bit of evidence was produced showing that, though a builder had fortified himself by procuring, as the law directs, permits from the Inspector of Buildings and from the Bureau of Encumbrances allowing him to erect a passageway bridge over a sidewalk during the execution of his building operations, the police refused to allow it to be built and repeatedly arrested his workmen because he had not "seen" the captain of the precinct with two hundred and fifty dollars enclosed in an envelope. Minor intimations of the venality of the under inspectors of the Building Department, are, of course, only

what was to be expected where similar officials in every other department of the public service are shown to be corrupt; but architects and builders may derive some consolation from the fact that witnesses, from the stand, testified to the rectitude of the official at the head of that department with which they had most to do. As showing how Tammany manages to exact toll from every one, an incident that was told us by a friend a few days since has an interest. As the sidewalk in front of his house needed repair, he applied at intervals to the Street Department to have it fixed, his requests, appeals and threats bringing him as little relief as his letters published in the daily papers. At length a wiser friend, though not an older citizen, told him the only way to accomplish his object was to join the junior Tammany club, Pequot, or Sangammon, or whatever it might be, of his district. He saw the point, and the morning after his name was placed on the club roll he found a city force repairing his sidewalk!

DE NANSOUTY, the editor of Le Génie Civil, gives a short account of the report brought from the Chicago Exhibition by M. Arbel, one of the delegates sent by the Chamber of Commerce of St. Etienne, accompanying it with the earnest and discriminating comments which we have learned to expect from him. As a delegate from a great manufacturing city, M. Arbel was, presumably, very familiar with French machinery and methods of work, and his admiration of American machinery and workshop organization is certainly flattering. In machines, pure and simple, the French probably are quite equal to us, but what surprised M. Arbel, as it did most of the expert foreign visitors who have published their observations, was the multiplicity and excellence of the machine-tools, to use the French expression, which are every day becoming more common in our factories. With the help of these machine-tools, as M. Arbel says, the part of the workman in America consists less in physical exertion, and more in intelligent direction, than anywhere else in the world; and the result is that the American workman, with his machine-tools, his appliances for saving him from interruption and exertion, and his carefully-planned part in the general scheme of manufacture, turns out, on an average, from two to three times as much work as his European colleague. Moreover, the work is better done. Instead of the fitting and adjusting by hand necessary in the French workshops, the Americans, under their system of interchangeability of parts, make nearly everything to gauge, and the assembling of the parts so made is a triffing matter. Even the tools in the best American workshops, are made to gauge, by men specially detailed for the purpose. workman is allowed to sharpen his own tools, but when a tool loses its edge, the man using it rings an electric bell, and gives it to a boy, employed to do such errands, who takes it to the repair-room, and immediately returns with a fresh one. In this way, the work of the tools is kept uniform, and there is none of the loitering and gossiping around the forges and grindstone which consumes so much time in the foreign shops. In this way, although the American workmen are better paid than the French and Belgians, the cost of the work done by them is less. The American manufacturers, M. de Nansouty says, carry out the same principle in regard to tools. While a French manufacturer, if he saves a little money, hastens to "salt it down" in railroad stocks, or Government bonds, and continues to use the same old machinery that he inherited from his grandfather, the American uses his profits in buying improved machinery and machine-tools which will enable him to do the same work that he was doing before still more rapidly and cheaply, thus investing his savings at compound interest, and, generally, at a high rate. Moreover, when he has bought his new tools, he uses them. The Frenchman is apt, when he has really made up his mind to buy an improved tool, to keep it as an ornament, using it carefully and sparingly. American, on the contrary, begins by ascertaining how much money he can save by using the new machine. Obviously, as he thinks, if he can save a given fraction of a cent, say, on each pair of shoes turned out with its aid, the more pairs he makes it turn out, the sooner it will pay for itself, and the less he will lose in interest on his outlay. With this idea, the machine is driven well up to its capacity, and, although it of course wears out sooner than if it stands idle, it will generally, by the time that it is unfit for service have earned, not only enough to pay for itself, but enough to provide a machine of still greater efficiency to take its place.

FRENCH STYLES OF ARCHITECTURE. 1 – III.

AN HISTORICAL SKETCH.



Fig. 16. Doorway in the Château of Issy, (Seine).

BETWEEN the end of Louis XV and the advent of Louis XVI, the transition was fully prepared for, as has been said, by the reaction toward the antique. The close of the reign of Louis XV and the beginning of Louis XVI's are



Fig. 17. Panel Medallion at Versailles.

one and the same. Therefore, we must not, so far as the arts

are concerned, assume as impassable limits the dates of the life of a king or of his accession to the throne. Better is it to consider the various influences that determine a transformation at such or such a period of our history. The name of the reigning monarch serves in this case as an aid to the memory, as a simple guiding mark.

The disposition of one of the halls of the Château of Issy (Fig. 16) belongs to this transitional style, which, under Louis XV, was suddenly opposed to the insipid aberrations of the "rocaille." We had then approached, under pretext of returning "to the antique," the style of the early years of Louis XIV, a stately, severe, quite Classic style, whose rules Bullet, the first architect of the château in question—erected during the reign of the "grand Roy"—had correctly applied as formulated by the academical professor François Blondel.

Here is an arch between pilasters with capitals, beneath a complete entablature—those "dust nests," the result of an architectural blunder. The profiling is in a fashion as tiresome as it is noble and severe, and is ill adapted to our notions of comfort and neatness in an interior. The robust forms and



Fig. 18. Panel in the Château of Versailles.

the dispositions, which may be monumental in their proper place — on an inner court, for example — to be practicable in the interior of a dwelling, had to degenerate and become thin and stiff.

However, certain fine details retained at this period an apparent reflection of the seventeenth century. Such is the medallion adorned with fleur-de-lis (Fig. 17), crowned with roses and framed with laurels, in the apartments of Versailles. But a Neo-Renaissance was soon produced which made the Louis XVI a pleasing style, notwithstanding the severity of the rectilineal architectural dispositions.

It is in the enrichment of the panels, pilasters or friezes of the wainscoting (small apartments of Marie-Antoinette at Versailles, Figure 18) that we find, as it were, a reminder, a résumé, of the decorative niceties of the Renaissance, though distributed with the taste and the skilful reserve which characterized the art of the eighteenth century, at the beginning. It is the antique arabesque, copied by a Raphael, resurrected at the very height of the Regency and adopting the tone of the day.

¹ From the French of E. Rivoalen, in Planat's Encuclopédie de l'Architecture et de la Construction. Continued from No. 966, page 146.

But at Compiègne and Fontainebleau, where certain rooms (Fig. 19) and certain salons (Fig. 20) were, at divers times

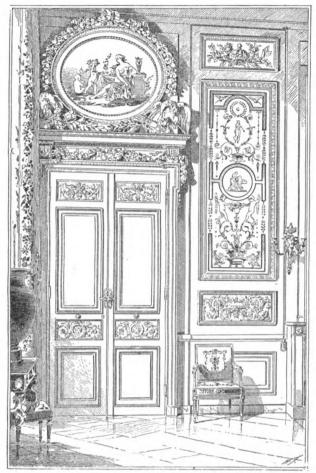


Fig. 19. Apartments of the Empress, Compiègne.

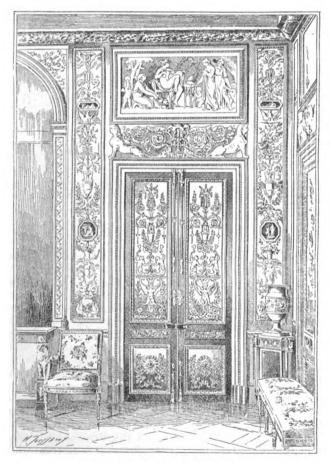


Fig. 20. Salon des Jeux, Fontainebleau.

during the reign of Louis XVI, decorated according to the taste of the moment, we sometimes encounter (Fig. 19)

the vigorous projections of the beginning of the reign, and a delicate imitation of the antique frescos then recently discovered at Pompeii and Herculaneum; and, sometimes (Fig. 20), the projections disappear, giving place to flat casings and frames of gilded wood; these are rectilineal and almost smooth, but set off with a few finely chiselled bronze-like mouldings.

In small compartments, thinly and stiffly distributed, there is displayed finally, at the approach of the Revolution, a painted or relief ornamentation, inspired in composition and arrangement, in lightness and delicacy, from antique frescos, bas-reliefs and even cameos; a very original adaptation of decorative elements, borrowed from nature, is mixed with the traditional forms.

The Empire, as has been said, merely took up again — with the artists and artisans of the school interrupted by the Revolution — the art of which typical specimens have just been given. But the French characteristics that still remained, in the last days of Louis XVI, individuality and cleverness — even in imitations from the antique — had suddenly become pompier, that is to say too conventional and bombastic, composed in accordance with formulas, and not in accordance with the natural sentiments; these seemed to have been chilled by the convulsive breath of the Terror, both among surviving artists and the new comers.

E. RIVOALEN.

THE ESSENTIAL CONDITIONS OF SAFETY IN THEATRES.1—II.

CONSTRUCTION OF BUILDING.

THEATRE building, to be structurally safe, requires to be constructed wholly of fire-resisting materials. The natural tendency being to use the largest part of the available funds for the exterior and interior decoration of the theatre, it is advisable that the method of construction and the building materials used should be regulated by strict building laws.

Woodwork is to be avoided in the construction. Its use must be

Woodwork is to be avoided in the construction. Its use must be confined to the trim of the doors and windows, the usual doors and the auditorium floor and platforms. The floors of corridors, foyers and lobbies should be tiled. Wooden wainscoting should be avoided, and marble or tiling for stairs, lobbies and foyers and toilet-rooms, and stucco work for the decoration of the auditorium and the boxes should take its place. Exposed iron-work should not be used anywhere, it being unsafe, except when cased with fireproof material. Brick and terra-cotta should be used in preference to stone. The well-known principles of sound, fire-resisting construction should be applied to all parts of the theatre building. All main division-walls should be strong and solidly built, well bonded together, and constructed of brick. These, as well as all staircase walls, should be run, at least, three feet above the roof to form fire-walls. All vertical and horizontal divisions should be fireproof, and this refers not only to the main divisions of the plan, but likewise to all partitions. The external and internal walls must be well bonded together.

external and internal walls must be well bonded together.

Wherever openings are provided in fire-walls for communication, they should be closed with fire-resisting doors. The doors should have stone saddles, and should be constructed either of boiler-iron, or better, of double layers of planks of oak, lined on both sides and at the ends with tin.

The stage proper is the place where an immense amount of easily combustible material is necessarily crowded together. It should be the special aim to make this part of the building, where a fire once started is much more dangerous and much more difficult to fight than in other parts of the house, as fire-resisting as possible.

The floor of the stage proper must necessarily be constructed of wood, on account of the numerous traps, but the fixed portion of the

The floor of the stage proper must necessarily be constructed of wood, on account of the numerous traps, but the fixed portion of the stage floor in the wings or sides of the stage, the entire fly galleries, and the gridiron, or rigging-loft, except the wooden floor covering the same, should be built of iron or steel beams and made fireproof, and the pin rails of the fly galleries should be of iron or steel. The roof of the stage should be constructed of iron and covered with slate, tile, or other fireproof material.

In the fitting up of the under stage, woodwork should be avoided. This is the special department of the stage carpenter, who usually clings to old-fashioned traditions and the use of antiquated apparatus. Much of the equipment of the whole stage, the stage machinery, the traps, the fly rails, the hoisting apparatus, etc., could be made safer and more durable by substituting iron and steel for wood, by using hydraulic lifting machinery with steel wires in place of the old-fashioned hoists, sheaves and ropes, still so much in use. Suggestions tending to improve the stage were made by the "Asphaleia" Society, of Vienna, soon after the destruction by fire of the Ring Theatre in Vienna, where several hundred persons perished by fire and smoke. A number of European theatres, such as those at Halle, in Germany, and at Buda-Pesth, in Austria-Hungary, and the Royal Prussian "Schauspielhaus," in Berlin, have been

¹ An Essay on Modern Theatre Planning, Construction, Equipment and Management. By Wm. Paul Gerhard, C. E., Consulting Engineer for Sanitary Works. Continued from No. 965, page 136.

fitted up in this manner with most satisfactory results. Up to the time of writing, there is, in this country, but one solitary instance of this advanced method of stage construction, namely, in the Auditorium Theatre, in Chicago. It is noteworthy that in the "Asphaleia" stage setting, much of the scenery and scene setting is painted on thin sheet iron, held in light iron frames.

Wherever woodwork is necessarily employed in the construction of the stage and its accessories, it may be made fire-resisting by impregnation, or at least, by the application of fireproof paint. Even the ordinary whitewashing of woodwork helps to protect the

The proscenium-wall, forming the main division between stage and auditorium, must be a fire-wall built of brick, and the stage-opening should be arched over. The molded frame or other finish, and all decorative features around the proscenium-opening, should consist of incombustible material.

The auditorium should likewise be fireproof in all its parts. main floor and the tiers should be constructed of fireproofed iron beams, and brick or tile arches. Iron columns for the support of iron girders should be encased with fireproof materials. The fronts of galleries and balconies should be formed of fireproof material. The ceilings of the auditorium, the balcony and the galleries should be fireproof. The auditorium roof should be constructed of iron, and the roof covered with slate or tile. All boxes in the auditorium, and the partitions between boxes, should consist of fireproof mate rial. Plaster should be used in preference to wood or papier-maché for the decorative treatment of the boxes.

The upper floors in the auditorium may be laid with wooden boards, but there should be no hollow spaces underneath, and the floors should be laid on sleepers deeply bedded in concrete. The ceiling of the cellar should be fireproofed with I-beams and brick arches, or other fireproof construction, except as stated above, directly under the middle portion of the stage.

The actors' dressing-rooms and all other rooms The actors' dressing-rooms and all other rooms necessary on the stage end of the building should be fireproof in all parts. Particular attention should be paid to the dressing-rooms and storage-rooms for wardrobes. The walls and the corridor separating the actors' dressing-rooms from the stage, and all dressing-room partitions must be fireproof. All doors should be of iron or fire-resisting construction. All shelving and cupboards in all dressing-rooms, property-rooms, wardrobes and storage-rooms should be constructed of metal or slate, or other approved fireproof material.

Finally, all halls, passages and foyers, should have fireproof ceilings and floors, and all staircases throughout the theatre should be constructed in a fireproof manner.

be constructed in a fireproof manner.

All partitions must be built of fireproof blocks. There should be no canvas covering of walls, and wooden wainscoting should be used sparingly and only when applied directly to solid fireproof filling.

All windows in a theatre should be arranged to open, and none of the windows in outside walls should have fixed sashes or iron grilles.

STAIRCASES, ENTRANCES AND EXITS, AND FIRE ESCAPES.

The planning and construction of the staircases and exits of a theatre are of the greatest importance, because they form the principal means of safety for an excited or terror-stricken audience when a fire breaks out, or when there is a sudden panic from any cause. For this reason all stairs and exits must be so arranged as to disperse an audience as quickly as possible. The emptying of a well-planned theatre should not require more than two or three

All stairs in a theatre should be fireproof and encased in firewalls. Open stair-well construction should be avoided as dangerous. The stairs should be from four to six feet wide, according to the maximum number of people for which they are intended. The minimum width for fifty persons is 4 feet, and 6 inches should be added in width for every additional fifty people.

All stairs should have easy and even treads. The risers should not

All stairs should have easy and even treads. The risers should not exceed seven and one-half inches, and the width of treads should be not less than ten and one-half inches. Winding stairs should be prohibited, except in case the winders have treads not less than 7½ inches wide at the narrowest part. Single or double steps should ches wide at the narrowest part. Single or double steps should never be permitted, as they form dangerous stumbling-blocks. Long flights of stairs must be broken by several landings, at least 4 feet wide. The Boston Building Law calls for stair flights to have not less than 3, nor more than 15, steps.

There should be, on each side of all stairs and landings, well-fastened hand-rails turned into the wall at the ends of stairs. Very

fastened hand-rails turned into the wall at the ends of stairs. Very wide stairs are preferably divided by a strong metal baluster or intermediate central rail. All staircase halls should be made as smoke-proof as possible. The stairs for the balcony and gallery should not communicate with the cellar, so that smoke from a cellar fire may not rise up through the staircase.

There should be, at least, two entirely separate stairs for each part of the audience, one for each side of the building. Inasmuch as the occupants of the gallery have the longest way to the street, and also because the experience of theatre catastrophes teaches that this part of the audience is the one most endangered in case of a panic, there should really be more stairs and exits for the highest panic, there should really be more stairs and exits for the highest tier, although in the theatres erected in the past this precaution has seldom, if ever, been observed. The stairs serving different tiers

should not communicate with each other, and the meeting of two streams of people on the same stairs should always be avoided. Each portion of the audience, the parquet, the balcony and the gallery should leave by separate stairs and exits. Each tier should also have separate wide corridors running all around and leading to a foyer and to the staircases.

It is usual to calculate two exits for 300 persons, and three for 500

persons, not including the outside fire-escapes. The more exits there are, the less liability of fierce struggles and jams during a panic, and the less danger there is for old or weak persons from becoming

The planning of the means of egress, the exits and fire-escapes, in such a way as to effect a quiet and quick emptying of a theatre, requires the most careful study. All aisles, corridors, passages and stairs should be of even or increasing width, must not be tortuous, and should have no obstructions of any kind, such as pay-boxes, cloak-rooms, refreshment-counters, etc. All passages leading to

and should have no obstructions of any kind, such as pay-boxes, cloak-rooms, refreshment-counters, etc. All passages leading to exits must be, at least, four feet wide.

The best arrangement and judicious location of the exits depends to a great extent upon the site of the theatre. If the same permits placing plenty of wide and easily reached exits on all sides of the building, the safety of the audience is assured. The more the audience can be subdivided, the quicker can a theatre be emptied.

The minimum width of exits for 500 or less persons, according to both the Boston and New York theatre laws, is five feet, and twenty inches shall be added in width for each additional 100 persons.

inches shall be added in width for each additional 100 persons. The exits must likewise be free from projections or obstructions of

Many kind.

Many lives have been lost in theatre catastrophes owing to faulty arrangement of the doors. It is imperative that all exit doors be made to open outward, to prevent a jam in case of a panic. doors in corridors must, moreover, be so hung as not to become an obstruction in the passageway. Sliding doors should never be used. Emergency exits or doors, which are frequently advocated, are not desirable. They have often been found locked when needed, and, moreover, the people are not familiar with their location. All stairs and exit doors should be opened for the use of the use of the public at each delivery doors should be opened for the use of the public at each daily and nightly performance. Exit doors should have proper bolts at shoulder height.

All exits should be as conspicuous as possible and should be plainly marked in large legible letters, and all doors not leading to exits should be lettered "no exit."

In addition to the songents stairs mentioned above each tion

In addition to the separate stairs mentioned above, each tier should have exits to, at least, two well constructed outside iron fireby smoke. All such fire-escapes, to be of any use, must be so constructed with regular steps that they can be used by women and children. These outside fire-escapes should be covered with metal hoods or awnings to prevent, as much as possible, their becoming slippery and difficult to use when covered with snow and ice in winter weather. The New York Law requires the fire-escape hal winter weather. The New York Law requires the fire-escape bal-conies to be four feet wide, and the stairs to have not more than eight-and-one-half-inch risers and at least nine-inch treads. They must be built sufficiently strong to carry the weight of a large crowd.

The same care and attention is required in the construction of The same care and attention is required in the construction of the stairs for that part of the building containing the stage, the offices and the dressing-rooms. The stairs and exits for the actors and stage-hands should be entirely separate from those for the spectators, and there should be at least two such stairs and exits, preferably one at each end of the stage. There should also be fire-proof stairs leading from the fly galleries and the rigging-loft, one on each side of the stage, these places being in case of a stage fire among the most dangerous, owing to the rapid rising of the smoke and the flames. It will be remembered that at the burning of the Paris Opéra Comique, the majority of the audience escaped. of the Paris Opéra Comique, the majority of the audience escaped, while many chorus-singers and ballet girls were burned to death,

because the stage exits and stairs were lamentably insufficient.

Finally, there should be well-fastened iron ladders provided on the outside courts and leading to all roofs of the building, for the use of the firemen.

AISLES AND CHAIRS.

The width and number of aisles in the parquet, balcony and seats are better than a few wide aisles. Aisles should be straight and leading directly to the exits, or else the direction of the nearest exit should be indicated on the wall by a conspicuous arrow. The aisles should widen with the number of rows of seats which they serve. The minimum width of aisles is three feet, to which should be added one and one-half inch for every five feet length of

In the orchestra, or parquet, there should be no steps in the aisles, but the aisles should be inclined under a gradient of not more than one in ten. Gradients should likewise be used for differences in level between the aisles and the open courts.

Aisles should never be obstructed by camp-stools or movable chairs, which become a source of danger when overturned during a

panic, nor should standing in the aisles be permitted.

The width and depth of the chairs or seats should not reach below a certain minimum, both for comfort's and safety's sake, and

there should be not more than thirteen seats between two aisles, so that no seat in the audience has more than six seats between it and

The frame-work of the chairs should be constructed of fireproof materials, the chairs should be firmly and well bolted, or otherwise fastened to the floor, and the seats should preferably be automatic, i.e. self-raising. In any case, they must be hinged so as to be easily raised and placed out of the way to facilitate the emptying of the rows of seats.

Movable chairs should be allowed only in the boxes, and for each of these the number of seats should be limited.

FIREPROOF CURTAIN.

The stage-opening in the proscenium-wall should be closed by means of a fireproof curtain, entirely separating the stage from the auditorium. The object of the curtain is to prevent a fire on the stage or in the flies from leaping over into the auditorium, and to interpose a barrier to the smoke and fire-gases generated in a conflagration. It is, therefore, one of the chief means of safety for the audience, and in theatres where it is installed, kept in good working order, and let down at the first moment of danger, it helps

Numerous suggestions have been made regarding the material and construction of fireproof curtains. The three principal forms adopted in practice are a curtain of wire gauze, a curtain built of corrugated-iron, and asbestos woven curtains. In European theatres the first two kinds have been tried, whereas the asbestos fireproof curtain is chiefly used in American theatres.

Curtains made of wire gauze with fine mesh have not proved successful in actual use, because while they keep the flames from spreading across the stage opening into the auditorium, they allow the smoke to pass, and also because they increase the panic and confusion by giving the frightened audience a view of the fire on the

stage.
Corrugated-iron curtains are better in this respect. They should travel easily in be accurately guided at both ends and should travel easily in proper vertical metal grooves, placed on both sides of the prosce-nium-opening, and well fastened to the brick wall, otherwise they are liable to stick fast at the moment when wanted. Such iron sliding-curtains have not, in practice, proved themselves always reliable. It is important that the apparatus for raising or lowering the fire-curtain should be on the stage, and not in the rigging-loft, as was the case in the Vienna Ring Theatre, because this point may be beyond reach soon after the outbreak of a fire on the stage. Unless built very strong, iron curtains are liable to buckle and warp, and do not resist a strong pressure due to the expansion of the air by the heat in case of ire. They should fit tightly, to prevent the escape of smoke and should be strong enough to sustain a press tree for at least ten minutes, to give the audience time to escape. If they are not protected from above by automatic sprinkling-apparatus, or a series of perforated pipes connected with the supplypipes or roof-tanks so as to allow a sheet of water to run down along the curtain, they may become red hot during a fierce fire and thus endanger the spectators.

On the whole, thick woven asbestos fireproof curtains are lighter on the whole, thick woven aspessos hreproof curtains are lighter and more easily handled than iron curtains, and prove well adapted to check the spread of flames and to keep back the smoke, at least, sufficiently long to permit the complete emptying of the theatre. The asbestos curtain should travel in grooves and should fit the proscenium-opening as closely as possible.

Whatever kind of fireproof curtain is chosen, it should not merely

be used in case of an emergency, but nightly, and it should be raised a few minutes before the beginning of, and lowered immediated

ately after, the performance.

It is a good plan, as a further protection of the proscenium-opening, to provide it with a 2½-inch perforated copper pipe, fed from the sprinkler tank by means of shut-off valves operated from the prompter's side of the stage, the descending stream of water forming who set in operations of Scientific streams of water forming who set in operations of Scientific streams of water forming who set in operations of Scientific streams of water forming who set in operations of the stream of water forming who set in operations of the stream of the set in the set in

ing, when set in operation, an efficient water-curtain.

STAGE VENTILATOR.

Every theatre stage should be provided in its roof with one or at the level of the stage, or arranged to work automatically by the burning of a hemp cord in case of a stage fire. The object of this ventilator is to provide an outlet and ready means of escape for the thick smoke and the fire gases. Such a ventilator would also act as a means of increasing the draught and spread of the fire, and on this account it has been objected to by many who were evidently more concerned with the saving of the building from destruction than with the saving of life. But, human life being of greater value than property, the objection raised is evidently of little importance, considering the saving of life. property, the objection raised is evidently of little importance, considering the fact that the ventilator acts as a powerful means of removing the smoke. As frequent theatre catastrophes have sufficiently demonstrated, the smoke is a more deadly agent than fire, and constitutes the chief danger to the audience. Incredible as it may sound, it is nevertheless true, that, on the average, only five minutes elapse between the appearance of fire in front of the proscenium-opening and the total extinction of human life by smoke and fire gases. This worst of all foes, smoke, must be kept from the audience by all known means. by all known means.

The two appliances, a fireproof curtain and a stage ventilator, act combined as the most important means of protection to the audience in case of a theatre fire. Where these are installed it is, on the other hand, absolutely necessary to provide safe means of retreat for the stage-hands employed in the rigging-loft and in the fly gal-

In Boston, the building law requires that the combined area of the stage ventilators be equal to $\frac{1}{10}$ the area of the stage-floor, and each ventilator is to have a counterbalanced valve, so as to open

each ventilator is to have a counterbalanced valve, so as to open automatically, the valve being kept closed ordinarily by a cord of combustible material, run down to the prompter's desk.

The New York Building Law requires metal sliding skylights in the stage roof, of a combined area equal, at least, to \(\frac{1}{2} \) the area of the stage. These skylights are to be fitted with sliding sashes, glazed with double-thick glass, not exceeding \(\frac{1}{2} \)-inch thick. Each pane is to measure at least 300 square inches. The skylights are to be so constructed as to open instantly on the burning or cutting of a

be so constructed as to open instantly on the burning of cutting of a hempen cord, ordinarily arranged to keep the skylight closed.

A very ingenious apparatus for stage ventilation was fitted up some years ago in a Chicago theatre. The proscenium-wall was made fireproof and all openings in it were stopped by fire-resisting doors provided with springs to keep them closed. Over the stage an exit for smoke is provided, consisting of a boiler-iron flue, 8 feet in diameter and 30 feet high. In this flue is a valve made of a wooden frame covered with canvas, which is kept closed by a balance weight. A wire cable connection is carried down from the valve to each side of the stage, and there are other cables carried to points in the auditorium under control of the ushers. By pulling any of these cables the valve is opened, while a very simple and inany of these cables the valve is opened, while a very simple and ingenious contrivance closes simultaneously the ventilating outlet over the audience chandelier, thus reversing the usual movement of air from the stage to the auditorium ventilator. Should the cable not be worked in time, the valve being of canvas is readily destroyed by fire, and the smoke outlet in the stage roof is thereby opened. The same contrivance may at ordinary times be used for the venti-lation of the stage, and during performances it should be opened when it is desired to remove the powder smoke, incident to fireworks or the firing of guns.

FIREPROOF TREATMENT OF STAGE SCENERY.

The usual stage scenery and scenic paraphernalia constitute a conglomeration of highly dried-up woodwork, a perfect labyrinth of ropes and a vast quantity of gauze borders and hanging drapery. This mass of highly combustible and easily inflammable material forms a constant danger and menace to the stage, particularly when

brought in close vicinity to gas-lights.

It should be the aim to make the various parts of the stage scenery, such as the wings, the borders, the drop-scenes, and the set-pieces as fire-resisting as possible. The substitution of light iron framework in place of wood for attaching the painted canvas is desirable. Where wooden frames are used they should be coated with fireproof

paint.

All scenery, draperies and furniture should be rendered non-in-All scenery, draperies and furniture should be rendered non-inflammable by chemical treatment. The treatment, to remain effective, should be renewed periodically. This is easily accomplished where a theatre is used by the same company during the entire season, but it is difficult to insist upon where different travelling companies occupy the theatre in succession. The fire-proof treatment of scenery is required in the New York theatre law, but practically the law is a dead letter.

The woodwork constituting the floor of the stage proper and the traps in the under stage, should be rendered uninflammable by chemical treatment.

chemical treatment.

All scenery for large theatres should be stored in a separate fire-proof scene-dock, forming an annex to the theatre building.

STAGE CONSTRUCTION AND STAGE MACHINERY.

I have already stated that the stage construction and machinery of the majority of theatres is antiquated, and that the system followed from time immemorial is susceptible of much improvement. In fact, what is wanted is a radical improvement and innovation, tending to render this part of the building much more secure, and at the

In a paper in the Journal of the Society of Arts, on "Scenic-Illusions and Stage Appliances," Mr. Percy Fitzgerald, F. S. A., relates that "for the new Paris Opera House, built by Garnier, a novel plan of stage construction was offered and seriously entertained. This was to divide the whole stage into small platforms, each supported on pistons moving up and down in hydraulic presses. A lever, put in motion by the stage-manager, would thus elevate or depress any section of the stage to the height or depth required." depress any section of the stage to the height or depth required." He continues by saying "this was ingenious and it was elaborated with care and nearly adopted, but the objections were insuperable. The space below the stage was lost, being filled with pumps and apparatus; there were nearly a hundred pistons, but the real danger was the almost certainty of some part of the machinery getting out of order." He adds that "the system was actually adopted at the new Vaudeville, but never came into use."

The system rejected for the Paris Opera House has since then

The system rejected for the Paris Opera House has since then been introduced into a number of smaller theatres, with absolute success. Its great advantage consists in reducing the risk of fire, by substituting simple iron construction, iron supports and iron machinery for the innumerable wooden traps under the stage, and by replacing the inflammable canvas and gauze scenery stretched on wooden frames by scenic decorations painted on sheet-iron, held in light iron frames. Woodwork is used only for the stage platforms, but not for their support. This is the new system of the "Asphaleia" Society of Vienna. It has been used on the stages of the new theatres at Buda-Pesth and at Halle, and also partially in a Berlin theatre. Independent of this system, several other theatres have adopted iron in place of wood for construction, and steel wires in place of hemp ropes for hoisting apparatus; for instance, the new theatre in Rouen, France, the new Hofburg Theatre in Vienna, and

the Royal Theatre in Edinburgh.

The Buda-Pesth Theatre is considered to be one of the most sci-The Buda-Pesth Theatre is considered to be one of the most scientifically and perfectly equipped theatres in existence. Its whole stage floor is divided into many traps of different size and shape, some circular and some oblong, which are operated by pistons worked by hydraulic power. By touching a lever, any section can be raised, lowered, or inclined, and thus the stage may be transformed into terraces or gradual inclines, instead of the usual method, consisting in building up such scenery on the stage. The rigging-loft is constructed entirely in iron. The scenery of the "Asphaleia" system is equally novel. There are no flat drop-scenes and no side-scenes or coulisses, and borders are done away with. The whole stage forms a clean open space. In this is hung from above a large continuous curtain, or "horizon," as it is called, open toward the front and forming three sides. This is painted so as to represent different sky effects, and the horizon may be moved and by the use of proper light, the scene is readily changed. The movements of the horizon are also controlled under the stage by means of hydraulic machinery. The scenes are represented by detached pieces.

Apart from the novelty of the scenic effect, this new system is highly commendable, because it eliminates the chief elements of danger from fire in theatres, and also because it replaces hand-labor in the shifting of scenery and rearrangement of the stage, by a sci-

in the shifting of scenery and rearrangement of the stage, by a scientifically constructed mechanical power-system.

HEATING.

The heating of a theatre should always be done by a centralized system, in order to avoid the necessity of having many fires to look after, and of having a number of smoke flues, each of which constitutes a danger. Heating by warm-air furnaces is only adapted for very small theatres, and even in these it is objectionable on for very small theatres, and even in these it is objectionable on account of danger of fire, and because it rapidly dessicates woodwork and scenery, and renders the same still more easily inflamable. The choice of the system for larger buildings lies between warming by steam and by hot water. Whichever system may be preferred, it is essential that the heating of the auditorium be accomplished largely by the indirect method, which consists in the introduction of a constant supply of fresh air suitably warmed at heating stacks, placed at the basement or cellar ceiling. The indirect-heating system may be supplemented by a few direct steam-radiators placed near the exits, where there is frequently an unpleasant draught from the rush of cold air from out-doors. the rush of cold air from out-doors.

The stage is generally heated by direct heating coils or radiators, and care should be taken to keep the stage building at such a temperature, even when there are no performances, as to prevent the freezing of the water in the fire stand-pipes, and in the automatic-

sprinkler system.

The dressing-rooms, toilet-rooms, offices, stairs, corridors, foyers

and lobbies, are also heated by means of direct radiators.

The steam boiler must never be placed directly under the auditorium, or the stage. It is desirable to place it in a separate and detached building, or, at least, to remove it to a vault under the sidewalk. The boiler should be of the sectional, safety type. Special care is, of course, required in the construction of the boiler-flue. The boiler-room should be enclosed by brick walls, the ceiling should be fireproofed, and all doorways leading to the boiler-room should be of iron, or better, double tin-lined wooden doors. If the boiler-room is equipped with automatic sprinklers, care should be taken to have the fusible-solder joint arranged so as to stand a higher temperature without opening.

All steam pipes must be kept from direct contact with any wood-work, and they should be encased with double thimbles where they pass through floors, to avoid the danger of wood becoming charred

and ignited.

Floor registers are objectionable and are not permitted by the New York theatre law. Heating coils or radiators should not be placed in any aisles, passages or corridors where they would constitute an obstruction, but should be placed in recesses or niches.

LIGHTING.

The lighting arrangements of theatres, and particularly of the stage and the stage scenery, require the most thoughtful consideration and the greatest care in execution and arrangement, as they form one of the chief causes of theatre fires. The days when theatres were illuminated by candles or oil lamps are happily past. Gas-light, which is infinitely safer than either method, has long ago taken their place, and is now as rapidly being replaced by the still safer, and therefore much to be preferred, incandescent electric-

In the auditorium, gas-lights have proved objectionable on account f the immediate heat and vitiated atmosphere which they create. On the stage, all open flames used in the lighting up of the wings and borders, as well as the foot-lights, were a constant menace to the highly inflammable scenery and to the light costumes of the dancers. It is, therefore, safe to assert that, at least for the two principal parts of a theatre-building, electric-lighting has many advantages over gas-light. The introduction of the incandescent glow-lamp for the lighting of the stage and scenery increases the safety of a theatre-building perhaps more than any other safety-appliance. Of course, it is necessary that the wiring should be done in the best manner, according to the rules of the Fire Underwriters.

But the electric-current is not always available, and the installa-But the electric-current is not always available, and the installation of a special electric-plant may, in some cases, particularly for smaller theatre enterprises, prove too great an expense. Therefore, where the theatre depends on the use of gas, the gas-piping should be arranged with extreme care, and the management of all gas-lights should be under the control of a specially trained employé. All gas-pipes should be of wrought iron, and no lead or other pipes should be permitted. The piping must be put together in a proper and workmanlike manner and must be absolutely gastight under a severe pressure test. The joints of flexible Indiarubber gas-pipe, for the border and bunch lights and for stage chandeliers, must be carefully watched, and the rubber tubing chandeliers, must be carefully watched, and the rubber tubing should be protected from injury by being surrounded with spiral

The gas-meters should be placed in well-ventilated brick vaults, closed with fireproof doors. There should be, at least, two distinct supply-mains, one for the stage and the main lights in the auditosupply-mains, one for the stage and the main lights in the auditorium, and another for the staircases, corridors, lobbies, the entrances and exits, and the rear portion of the auditorium. This second line may also be used for supplying the dressing-rooms and offices in the stage building, although a third separate gas-main for these would be still better. Each main should be controlled by a shutoff valve, located in the sidewalk and accessible from out-doors, to turn off the supply of gas if not required. The stage gas-main should lead to a large gas-table, or distributor, located on the prompter's side of the stage, and at this table there should be a series of shut-offs, each with bye-pass to control, separately and independently, the lights in the auditorium, the central chandelier, the pendently, the lights in the auditorium, the central chandelier, the foot-lights, the wing lights, the border-lights, the ground-lights, the stage chandelier and the bunch-lights. The lights in the stairs, passages, lobbies, should be controlled only by a shut-off located in the lobby.

the lobby.

All gas and electric-lights surrounded with glass, should have fastened underneath a fine mesh wire netting. All open gas-flames must be protected by wire cages, or guards, which should be strongly fastened to the gas-brackets. The wire cages should be of sufficiently large diameter (at least ten inches) so that the wire may never become heated to more than 250° F. All side-lights should have stiff brackets. Swinging or jointed brackets should not be permitted. All fixtures should have strong pin stops. It is of advantage to have all gas-brackets in foyers, halls and stairs so arranged as to have detachable keys, so that the lights cannot under vantage to have all gas-brackets in loyers, hans and stairs so arranged as to have detachable keys, so that the lights cannot under any circumstances be tampered with. All these lights should be protected against draught by glass globes, but on the stage and in dressing-rooms all open flames should have wire cages.

All open flames should also be kept safely away from woodwork. The foot-lights should have a wire network and should be protected

with a strong wire guard, two feet distant from the foot-lights to prevent actors from coming too near to the lights. The trough for the foot-lights should be formed of fireproof material. All border-lights should be suspended by wire ropes. The lights in the wings should not come lower than five feet above the stage level.

The central chandelier in the auditorium, the foot lights and the border-lights, as well as all other rows of gas-lights, should be lighted with electric flash-lighting which is a safer method than the lighting with electric flash-lighting which is a safer method than the lighting up by means of spirit-lamps on poles, or by other open lights. Sunburners in the auditorium ceiling are preferable to chandeliers, and are usually arranged so as to assist in the ventilation of the main body of the theatre. The central lustre is hurtful to the eyes and in the way of the sight-line of the upper gallery, and its entire abolishment is much to be desired. All ducts used for carrying heated air from gas-lights should be made double and constructed of motel with intervening spaces. The calling ventilators in the audit metal with intervening spaces. The ceiling ventilators in the auditorium should have valves arranged so they may be shut off to prevent smoke in case of a fire being rapidly drawn up towards and through them, before the audience has departed.

Provision should be made for plenty of gas-light in all actor's dressing-rooms, otherwise the actors may feel tempted to use candles in "making up."

Where lime or calcium light is used on the stage for special illuminations, it should be most carefully handled and manipulated.

Every theatre should, in addition to the gas or electric light,

Every theatre should, in addition to the gas or electric light, have for the sake of safety, an auxiliary system of lighting the passages, corridors, and all stairways and exits by means of oil lamps or candle lanterns, so that in case the gas is turned off, as happened in the Vienna Ring Theatre and the Brooklyn Theatre fires, or in case the electric-light fails, the exits and stairways are not left in total darkness. These oil or candle lanterns should be placed out of the way, in niches in the walls, closed by glass doors, so they cannot be extinguished by a draught of air or by smoke. It is



advisable to provide the lamp niches with fresh-air supply and a vent-flue carried outdoors. The oil burned in these lamps, as well as in those used on the stage in the presentation of plays, should be vegetable or colza oil, or sperm or whale oil, and not the mineral oil or kerosene. All oil should be stored in fireproof vaults, and the trimming and filling of the lamps should only be permitted in day-time. The oil lamps at exits should be provided with red and white glass, so as to be plainly distinguished. The auxiliary lights should be kept lighted from the time the theatre is open until the theatre and stage are emptied. The New York law requires all parts of the building devoted to the public, all outlets leading to the street including the open courts and corridors, to be lighted during each performance, and to be left lighted until the whole audience has departed. It also specifies the use of at least two, or more, oil lamps on each side of the auditorium in each tier, the same to be placed on fixed brackets, about seven feet high, to be filled with whale or lard oil, or else candles.

LIGHTNING-RODS.

I have not been able to find on record a single case of the burning or destruction of a theatre from being set on fire by lightning, but there are instances of theatre buildings having been struck. On March 20, 1784, lightning struck the theatre at Mantua, in Italy, during a performance, at which about 400 spectators were present. Of these, two were killed and ten severely injured. On the 26th of July, 1759, the theatre at Feltre, in Italy, was struck lightning, and Arago relates that many in the audience were killed or injured, and that the lights were extinguished by the electrical shock. In both cases the building did not take fire. There is always, in the event of a theatre being struck by lightning during a performance, the danger of a serious panic. It, therefore, seems proper and wise to provide theatre buildings with the protection which a well-constructed system of lightning-rods affords. The Frankfort-on-Main Opera House is protected by thirteen lightningrods, subjected to inspection annually.

VENTILATION AND SANITATION.

The efficient ventilation of the auditorium, of the stage, of the The efficient ventilation of the auditorium, of the stage, of the actors' and supers' dressing-rooms, and of the toilet-rooms, a thorough system of cleanliness and removal of dirt and rubbish, and finally, a safe and well-arranged system of drainage and plumbing, are important requirements, constituting together the question of "Theatre Hygiene," but they have but very little direct bearing on the subject of fire-prevention and fire-protection in theatres, and will, therefore, not be discussed here in detail.

The Roston Rubbing Law wiedly prescribes that every theatre

The Boston Building Law wisely prescribes that every theatre should have a system of ventilation so contrived as to provide fifty cubic feet of fresh air per minute, or three thousand cubic feet per

The old-fashioned central chandelier, or lustre, which constituted a chief feature in the older theatres, and which when gas-light came into use was utilized to assist in the ventilation of the auditorium, is happily going out of fashion. In more than one instance it car ried death and destruction, by creating during a fire a strong current of air from the stage into the auditorium, thus leading the smoke and fire gases to the upper galleries and suffocating the people. Serious accidents have also occurred through the falling of the chandelier during a performance.

I do not wish to be understood as being opposed to ceiling ventilation in the sufficiency. This is presented that the care of

I do not wish to be understood as being opposed to ceiling ventilation in the auditorium. This is necessary, even in the case of theatres lighted with electricity. But a judicious arrangement of the ventilators and registers is required. The ventilator over the stage, when fully opened, should be larger than the combined area of the ventilators in the auditorium ceiling. This, together with the fact that the stage ventilator is nearly always higher than the one for the audience, would assure a movement of air away from the auditorium towards the stage. To make quite sure of this, it is a good plan to have the vent-registers in the ceiling of the auditorium controlled from the stage, so that in case a fire breaks out on the stage, the person whose duty it is to lower the fireproof curtain, and stage, the person whose duty it is to lower the fireproof curtain, and to open the stage-roof ventilators, will also simultaneously close the vent-register in the auditorium ceiling. The smoke and fire-gases will thereby be effectively prevented from passing over into the auditorium. In any case, the ventilation of the stage and the auditorium. ditorium. In any case, the ventuation torium should be arranged entirely separate.

WM. PAUL GERHARD.

[To be continued.]

THE ITALIAN RENAISSANCE.1-V.

HINTS TO ARCHITECTURAL STUDENTS. - FLORENCE.

AD it not been for climatic considerations, necessitating the visiting of Naples and Rome before August, the studies of the travelling class would certainly have begun in Florence. Here was the cradle of the Renaissance, and the focus of its early activwas the crade of the Renaissance, and the focus of its early activity. From Tuscany emanated the most potent influences which went to the upbuilding of the splendid fabric of fifteenth and sixteenth century art throughout Italy. The completion of the Duomo, the noblest of Florence's Gothic monuments, by the erection of Brunellesco's majestic dome, was the beginning of the architectural Renaissance, as Ghiberti's bronze doors for her old Lombard baptistery, and Luca della Robbia's glazed terra-cotta decorations were

the pioneer works in the domain of Renaissance decorative detail.

The monuments of the Renaissance in Florence are so numerous and so profoundly interesting to the student of style; so touched, moreover, by the romance that clings to every manifestation of the moreover, by the romance that clings to every manifestation of the exuberant artistic, political, religious and social life of Florence, during the fourteenth and early fifteenth centuries, that they fascinate the beholder by a charm not to be encountered in Rome, or Milan, or Naples. They speak of the intensity and richness of Florentine life and thought, in that most wonderful period of modern history. They reveal a versatility, a wealth of creative resource, a flexibility in the adaptation to new ends of the rediscovered treasures of extinge ant form and a uniquestility of all new vading artistic spirit, such as the world has never seen, before or since. We cannot here recount the story of the rise and development of the Renaissance of architecture in Florence, but must content ourselves with brief allusion to the most important epoch-marks

of that development.

The foundation of this Renaissance was undoubtedly laid in the journey of Brunellesco to Rome in 1403; a journey made with the distinct intention of devoting himself to the study of the antique monuments of that civilization, whose recovery and re-constitution seemed to be the dream of the scholars and artists of his time. It was under the inspiration of Roman art that he created that master-piece of construction, the dome of the Duomo at Florence, begun in 1420 and completed only after his death, which took place begun in 1420 and completed only after his death, which took place in 1444, a work neither Gothic nor Classic; suggested, in part at least, by the ancient dome of the adjacent Baptistery, but itself the beginning of a long series of domes, which were to be the most striking and imposing contributions of the Renaissance to architectural form. It was followed by a series of works from the same hands, in which the Classic orders, consciously copied or imitated, Roman round arches, coffered and panelled vaults, and carved mouldings were employed for the detailed apparel of his various designs. Contemporary with him were Luca della Robbia and Ghiberti, whose various works in the domain of the accessory arts, executed in terra-cotta, bronze, stained-glass or wood, mainly for ecclesiastical uses, form a notable chapter in the development of the decorative details of Renaissance art. At the same time, palacebuilding received a great impulse in the erection of such splendid building received a great impulse in the erection of such splendid residences as the Medici (now Riccardi) palace, by the great Michelozzo (about 1430); the Pitti, built for Luca Pitti from designs by Brunellesco, about 1435-40, though not completed until the following century by Ammanati; the Rucellai by Brunellesco's other great contemporary student of Classic art, the famous Leo Battista Alberti, (1460), and near the close of the century, the imposing Palazzo Strozzi, (1489), by Benedetto da Majano and Cronaca. In these, and other less imposing structures, the traits of the heavy fortified palaces of the turbulent Middle Ages gradually disappeared, and the orders began to take their place in exterior design, though very timidly at first. Heavy vaultings were replaced by flat ceilings of carved, painted and gilded wood or plaster; mullioned windows by square-headed windows with pediments, columns, brackets and balconies. Meanwhile, a revolution in the details of architectural design was effected in the monuments, pulpits, loggias, altar-pieces and doorways, with which old churches were embellished. In these minor works Florence is especially rich, and as they engaged the talents and labors of the most distinguished archibuilding received a great impulse in the erection of such splendid lished. In these minor works Florence is especially rich, and as they engaged the talents and labors of the most distinguished architects, sculptors, and metal-workers of Tuscany, they constitute one of the most interesting and splendid phases of Florentine art. The names of Mino da Fiesole, Benedetto and Giuliano da Majano, Luca della Robbia, Donatello, Ghiberti, Desiderio da Settignano, and Benedetto da Rovezzano have gained much of their luster from the fonts, crucifixes, ciboria, pulpits, doors, altars and tombs, which they executed for various churches and monasteries in Flor-

In all these works of the Quattro cento,—the fifteenth century In all these works of the Quattro cento,—the fifteenth century—Classical formalism is wholly wanting. Imitation of Classic architectural forms is only approximate, and the individual fancy and invention of the artist finds the freest range. He resorts to antique art for suggestions only, imbibing its spirit, learning from it its secrets of order and proportion, of sequence of profiles, of carving of mouldings, of combinations of arch and pilaster, but treating every detail with perfect freedom, adapting every suggestion to the special problem and material in hand, transmuting all by the touch of independent genius or unerring taste. Early in the sixteenth century, however, the beginnings of a change are observable. Something more than mere suggestion is drawn from the springs of antique art. With oft-repeated and more minute inspection of its ruins came the growing consciousness of a certain uniformity and sysruins came the growing consciousness of a certain uniformity and system in Roman architecture. At the same time the onward march of the civilization of the Renaissance had brought about a change in the the civilization of the Kenaissance had brought about a change in the demands of palace-building, and a desire for a more textual reproduction of the glories of Roman architecture. The massive rockfaced masonry of the earlier palaces vanishes; with it disappear the arched panels over the door-ways, such as della Robbia loved to decorate, and the fanciful Corinthianesque pilasters and finely-wrought entablatures of small mouldings that had so long prevailed. In their place, the stately Roman orders, the triangular pediments, the formal arcades, or piers, between pilasters or engaged columns, now form the elements of architectural design, and formal dignity now form the elements of architectural design, and formal dignity drives out the freer fancifulness of earlier compositions. This



¹ Continued from No. 962, page 100.

phase of architectural design, however, never reached in Florence the affected and pretentious development which afterwards characterized Vicenza and Genoa, and Rococo and Jesuit styles are happily infrequent in their manifestations in Tuscany. The Serristori Palace, by Baccio d'Agnolo, built at the end of the fifteenth century, marks the beginning of this tendency towards Classical formalism, and the Pandolfini, Larderel, Bartolini and Guadagni palaces are later examples of its results; all of them, however, characterized by the never-failing taste and refinement of the Tuscan architecture. can architecture.

Michael Angelo and Ammanati are the chief representatives of the Baroque period in Florence. But Michael Angelo appears chiefly as a sculptor, in works which have rendered his name immortal. His architectural genius here finds expression mainly in interior design, as in the Library and the new Sacristy of San Lorenzo. The façade which he designed for that church was never built. The garden fearl of the Bitti is he Amarasti and the live Lorenzo. The façade which he designed for that chart, and the list built. The garden front of the Pitti is by Ammanati, and the list given below shows a few palaces and chapels belonging to the close of the sixteenth and to the seventeenth century. But even these are for the most part creditable or, at least, inoffensive works, and Florence is, on the whole, singularly free from the vulgarities which abound in cities where there is much work of the seventeenth and eighteenth centuries. Florence, was, in fact, a complete and finished city by the end of the sixteenth century, with little left to be done, either in church or palace-building. It has thus an aspect of harmony and of unspoiled antiquity which Venice alone of other Italian cities can rival. No Borromini ever attempted to revamp her Gothic or early Renaissance churches.

The bibliography of the Florentine Renaissance is almost that of the Italian Renaissance itself. Of special works there are also many. The general student may be referred to three among them, in particular: The "Architecture Toscane" of Montigny and Famin, Cellesis "Sei Fabriche di Firenze," and (although not a specifically architectural work), Yriarte's "Florence." The student will also do well to read such works bearing on the history of Florence, on its life and its arts other than architecture, as Mrs. Oliphant's "Makers of Florence," C. C. Perkins's "Tuscan Sculptors," and George Eliot's "Romolu"

CHURCHES OF THE RENAISSANCE IN FLORENCE. - FIFTEENTH CENTURY.

- DUOMO, or CATHEDRAL OF SANTA MARIA DEL FIORE: the DOME, 1420-1434, by Brunellesco; the LANTERN, also from his design, completed after his death (1462).
 SANTA CROCE, the PAZZI CHAPEL: about 1420, by Brunellesco; earliest example in Renaissance architecture of the pendentive dome; terra-cotta decorations by Luca della Robbia. Also by Brunellesco the SECOND CLOSTERS.

- 2. SANTA UNDUE, and I ame of the pendentive dome; terra-cotta decorations by Luca della Robbia. Also by Brunellesco the Second Cloistebs.

 3. Santa Maria Degli Innocenti: Church and Foundling Hospital, about same date 1420-1130, by Brunellesco; completed by Francesco della Luna.

 4. Santa Trinita, the Sacristy: 1421. (The church was wholly rebuilt in sixteenth century; façade by Buontalenti.)

 5. San Lorenzo: rebuilding begun by Brunellesco in 1425; the cupola belongs to a later date; completed 1461. Old Sacristy by Brunellesco, domical design, adorned by Donatello. The Cloisters are also by Brunellesco, domical design, adorned by Donatello. The Cloisters are also by Brunellesco.

 6. Santa Maria del Carmine, the Brancacci Chapel: date uncertain; decorated 1423-1425, by Massocio, Musolino and Filippo Lippi; the rest of the church mainly rebuilt in eighteenth century.

 7. San Marco: a medieval church rebuilt by Michelozzo, but altered in sixteenth century, and with a very late façade (1781); Sacristy: 1437, by Michelozzo; the Monastery, rebuilt by the same, 1436-1413.

 (Cafella Medici in Santa Croce: by Michelozzo [1460] Sec 2.)

 8. Santissima Annunziata: a much altered thirteenth century church; Rofunda of Chois: 1441-1472, by L. B. Alberti (very late decorations); Chapel of the Virgin: canopy from designs of Michelozzo, executed by Portigiani about 1418.

 9. San Miniato al Monte, Chapel in Nave: under the raised choir, 1448, from design by Michelozzo; Chapel S. Giacono: 1459, by Antonio Rosselino.

 10. Santa Maria Novella: a thirteenth and fourteenth century church; the Marbia Efacade by L. B. Alberti in 1456-1470; (lower portions, however, of much earlier date.)

 (Capella Rucellai in San Lorenzo: 1460, by L. B. Alberti; Sec 5.)

 11. Capella Rucellai in San Lorenzo: 1460, by L. B. Alberti; Sec 5.)

 12. Santo Spirito: erected 1476-1487, from designs by Brunellesco; the Dome by Saloi d'Andrea; the Campanile later by Baccio d'Agnolo; the Sacristy: 1480-1497, by Giuliuino da San Gaillo and Pollajuolo, with portico

SIXTEENTH CENTURY.

(Very few new churches were built during this century. Several were rebuilt or added to, but the chief activity was in palace-building.)

13. San Salvatore Del Monte, at San Miniato: 1504, by Cronaca, and called by Michael Angelo. "la bella villanella."

(The Duomo: exterior cornice and gallery of the Dome, by Baccio d'Agnolo, early in the century: See 1.)

(Tower of San Miniato: 1519, by Baccio d'Agnolo; See 9.)

14. Church at Camaldoli: rebuilt in 1523, by Vissari: altered in 1763.

(San Lorenzo, the New Sacristy: 1523-1535, by Michael Angelo, with the monuments to Giuliano and Lorenzo de Medici; also the Biblioteca Laurenziana, by the same, 1529. The Stairs were built from his designs by Vasari in 1511, and the ceiling by Tasso and Carolo, also from his designs. The rotunda of the Biblioteca Delciana is recent: 1811, by Pocciant; See 5.)

15. San Salvatore D'Ognissanti, remodelled in 1554 (and again in 1627).

(Alterations and "restorations" in San Marco and Santa Trinita; façade of latter by B. Buontalent; See 4 and 7.)

(San Spirito, the Second Cloisters: 1564, by B. Ammanati.

16. San Egidio: porch by Francesco Buontalenti, about 1580.

17. San Giovannino degli Scolopi: an early church rebuilt in 1580, by B. Ammanati; completed 1661, by Alfonso Parigi.

18. Madonna dell' impruneta, in the environs of Florence, 1589.

SEVENTEENTH CENTURY.

(SAN LORENZO, the CHAPEL OF THE PRINCES: 1601, by Matteo Nigetti from design by Gionanni de' Medici; See 5.) SAN SALVADORE D'OGNISSANTI: (See 15) remodelled 1627; façade by Matteo Nigetti.

Nigetti.

19. The Badia: an early church rebuilt 1825, by Segaloni, leaving only part of the choir of the original clidec untouched (for monuments and details see, later, the list of minor works).

The ecclesiastical architecture of this century in Florence is wholly insignificant. A new façade for San Marco in 1780; the remodelling of the church at Camaldoli in 1763 and of Santa Maria del Carmine in 1771-1780 make up substantially the whole record.

NINETEENTH CENTURY.

The two main achievements of this century in Florentine church-architecture have been the façades of SANTA CROCE, erected 1859-1853, from a design alleged to be by *Cronaca*, and of the DUOMO by *De Fabris*.

A. D. F. HAMLIN.

[To be continued.]

THE FRIEZE OF THE PARTHENON: A SUGGESTION.

HERE has always been a curious and unexplained anomaly about the celebrated Parthenon at Athens. Marvellous as it is in design and execution, its position upon the building was so unfortunate, that it could scarcely have shown to any better advantage there than it does to day, ruinous and incomplete, in the gloomy halls of the British Museum.

The Parthenon, as we all know, had a double row of columns across each end, and a single row along each side. The frieze surrounded the top of the cella, or solid part of the edifice, within the outer row of columns, and could not be seen except by standing within the columns and looking perpendicularly up. If the observer sought to improve his angle of vision by going outside, not only did he find the spaces between the columns less than their diameters, but the heavy architrave soon concealed the frieze altogether, being several feet lower, and only eight feet outside of Besides this, the only light it received, coming from below and from the direction of the spectator, was calculated rather to conceal than display the shadows upon which the effect of such a relief so much depends.

A French writer who visited Athens in 1674, before the Venetian bombardment, after describing the Parthenon as being then almost in its ancient perfection, goes on to speak of the frieze, which, he says, was so elevated, that it was with great difficulty that the eye could discover its real beauty, and it was only from a piece that had accidentally fallen, that he obtained an idea of its wonderful workmanship.

In the construction of the Parthenon itself there are some other curious irregularities. The outside columns are equal and equidistant all round the building. But the inner ones, of which there are six at each end, are not only smaller in diameter, but their bases are two steps higher, and their capitals also a little lower than the outside ones. Neither do they range exactly with the outer ones, being somewhat closer together, but the two end or corner ones range with the side walls of the building.

In other words, if we could suppose all the outside columns with their architraves to be removed, we should have a hexastyle In the construction of the Parthenon itself there are some other

their architraves to be removed, we should have a hexastyle temple, i. e. a temple with six detached columns at each end, supporting the pediments, but no columns at the sides. In this case, the frieze would run around the outside of the whole structure, columns and all, and would thus be entirely exposed to the light and

Our suggestion is, that although the Parthenon was, as we know, substantially built at one time, it is yet within the bounds of possibility, that Ictinus may originally have planned the smaller inner edifice with the frieze, and after it was completed, or nearly so, deedifice with the frieze, and after it was completed, or heart, so, accided to enlarge it by adding the larger row of outside columns. There may have been many reasons for this. The Athenians, as the temple approached completion, may not have thought it a sufficiently splendid shrine for their virgin goddess, or some unexpected addition to the public coffers, by victories or otherwise, may have permitted a larger outlay than was at first contemplated, or it may have been thought necessary that the great Panathenaic procession should march entirely round the temple, under the portico,
—these, and similar reasons, will suggest themselves to every

Certain it is that the frieze, entirely outside the building, and receiving the ever-varying play of light and shade on all its parts, would have produced an effect quite impossible when it was covered by the heavy portico. It can easily be seen, in any art-museum, where casts of this frieze are displayed, that the best effect of all the lines and shadows is obtained when the frieze is about as high above us as our distance from it, and the light comes from above.

The comparative flatness of the relief is often urged as a conse

quence of its unfortunate position, but this would seem to be a necessity in any sculpture so high above the eye.

There is an equal difficulty in assigning any æsthetic reason for the dissimilarity between the inner and outer columns, supposing the whole composition to be one design. It is true that a false per-spective may have thus been created, but theatrical tricks of this

kind are hardly consistent with the refined art of Phidias.

The small temple of Niké Apteros, (wingless victory), which also stood in the Acropolis, is often cited as one of the most charming examples of Greek architecture ever executed. It was built some thirty years before the Parthenon, and had columns at the two ends only, while a frieze, not unlike that of the Parthenon, ran around the whole exterior. In other words, this little temple, which, before the erection of the Parthenon, was the most admired, if not the most conspicuous object on the Acropolis, was a clear

prototype of what the Parthenon itself would have been without its external colonnade. Is it impossible that the Athenians, when the time came to rebuild the Parthenon, should have decided to fashion it, though on a grander scale, after the graceful little temple which

they had so long admired and loved?

This gem of ancient art was destroyed, unfortunately, in the same disaster which wrecked the Parthenon, the Venetian siege in 1687. Portions of its frieze are in the British Museum, with the 1687. Portions of it other Elgin Marbles.

It is one of the most singular paradoxes of history, that the Par thenon, the most splendid building of antiquity, after standing almost uninjured for more than twenty centuries, should have been destroyed by Christian bomb-shells, and that even in the present century, its choicest sculptures should have been carried away capcentury, its choicest sculptures should have been carried away captive by the nation which stands in the forefront of Christianity and civilization. We can hardly wonder that among the strange compensations which time often brings about, a strong sentiment is now taking shape all over the world in favor of the restoration of these sculptures to their original position, if not, indeed, the restoration of the Parthenon itself. Rearing its matchless proportions again, as of old, on its commanding site beneath the sunny skies of Greece, it would be the brightest gem, perhaps, in the whole girdle of the earth.

Surely there could be no fitter acknowledgment of modern civilization to Greek art, than the rehabilitation of the ancient glories of Pericles and Phidias on the summit of the Acropolis.

A. W. COLGATE.

A PUBLIC BUILDINGS BILL.1

N the House of Representatives, June 16, 1894, Mr. McKaig introduced the following Bill to provide for the securing of plans and for the erection of the public buildings of the United States:—

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

That the President, by and with the advice and consent of the Senate, shall appoint a commission on public architecture consisting of three architects of high scientific and artistic attainment and large practical experience, and two officers of the Engineer Corps of the United States Army. If necessary, a separate appointment of any or all of three members of the commission who are architects or any or an of three members of the commission who are architects may be made for each building under consideration, and members of the commission for one building may act upon other buildings. That the commission under the general direction of the Secretary of the Treasury shall discharge all the administrative duties relating to the procuring of designs and the appointing of architects for all the buildings hereafter erected by the Government of the United

SEG. 2. That the Secretary of the Treasury shall be the president of the commission ex officio, and the Supervising Architect of the Treasury Department shall be a member of the commission ex officio. In the absence of the president of the commission one of the members shall be elected as chairman by ballot, and he shall preside at the meetings and perform such other duties as the rule the commission may prescribe; and the Supervising Architect of the Treasury shall act as Secretary of the commission.

SEC. 3. That the Secretary of the Treasury shall convene the commission whenever in his judgment the exigencies of the service

require it.
SEC. 4. That the commission shall adopt rules and regulations governing competition in the procuring of designs, and for the government of its meetings and the general performance of its duties. The members of the commission shall be paid their actual expenses and subsistence and a per diem allowance of ten dollars while actually engaged in the performance of their official duties, but no per diem allowance or salary shall be allowed to any civil or military officer on account of his being employed on the commission, but his actual travelling expenses and subsistence shall be paid while en-

gaged thereon.
SEC. 5. That in case the limit of cost provided by law is one hundred thousand dollars, or over, the commission shall select by ballot, for each building, five architects to prepare designs in competition; in case the limit of cost is less than one hundred thousand dollars, the commission may, in its discretion, select by ballot an architect without competition. No architect shall be eligible for entering as a competitor, or for appointment, who has not had at least ten years' experience as an architect in chief, and unless he can satisfy the experience as an architect in chief, and unless he can satisfy the commission, through work already done by him, or otherwise, that he is competent to take charge of the economical construction of the building. The commission shall cause to be made and issued to the competing architects, surveys, schedules of requirements for the building, limitations of cost, and all facts which might control or influence the character of the required design. The commission shall specify the number and character of the drawings required, and fix a definite time for their completion. The Secretary of the Treasury, upon the recommendation of the commission, shall pay to each unsuccessful competitor, to reimburse him for expenses incurred in precessful competitor, to reimburse him for expenses incurred in preparing the competitive drawings, the following amounts: For de-

Referred to the Committee on Public Buildings and Grounds and ordered to be printed.

signs for buildings to cost not more than one hundred and fifty thousand dollars, the sum of one hundred and fifty dollars, and for each and every one hundred thousand dollars of the limit of cost of the building above that amount, the additional sum of one hundred dollars; but in no case shall more than one thousand dollars be paid to any unsuccessful competitor.

SEC. 6. That the commission shall reject and return to the author any drawings which have failed to exactly comply with the requirements and regulations adopted by the commission for the competiments and regulations adopted by the commission for the competition, and no compensation for their preparation shall be paid, and the author thereof shall be debarred from all further participation in the competition. The commission shall carefully examine the drawings of each competitor in competition and shall select one design as the design of the proposed building, and shall recommend its author as the architect of that building and return forthwith all other drawings to their authors. The Secretary of the Treasury shall thereupon appoint the architect so recommended and he shall perform all the customers duties performed by an architect in prishall thereupon appoint the architect so recommended and he shall perform all the customary duties performed by an architect in private practice, namely: The making of all preliminary sketches, the modifications of his design to meet possible requirements of the commission, the preparation of a set of general working-drawings to procure estimates; the preparation of a set of general details on a larger scale, a set of full-size drawings for moulded, carved or ornamental work, and a set of all other original drawings and specifications required by the commission. He shall supervise the construction of the building, and no payment shall be made to any contractor until the certificate of the architects has been received by the Secretary of the Treasury that the work has been executed in conformity tary of the Treasury that the work has been executed in conformity with the contract. He shall file a complete set of the construction drawings in the Treasury Department, from which all duplicates shall be made, which duplicates shall be paid for out of the appropriation for the building. The architect shall be paid for his services a fee of five per centum upon the total cost of the work and the usual travelling expenses. The expenses of the commission and the fees of the architect shall be paid by the Secretary of the Treasury out of the appropriation for the building in the erection of which they were incurred.

SEC. 7. That the Secretary of the Treasury, upon the recommendation of the commission, shall authorize the architect to employ a competent clerk-of-the-works, at a salary to be established by the commission, and he shall be paid for his services out of the approximation, and he shall be paid for his services out of the approximation.

priation for the building.

SEC. 8. That the Supervising Architect of the Treasury Department, under the direction of the Secretary of the Treasury, shall be the representative of the Government in all matters connected with the erection and completion of public buildings and the payment therefor. He shall receive proposals for the work and, with the approval of the architect of the building, he shall award the contracts therefor. He shall perform all other duties that now pertain to his office except such duties as are vested by this Act in the

architect of the building.

SEC. 9. That all Acts and parts of Acts inconsistent with this Act are hereby repealed.



LITTLE pile of pamphlets has accumulated on our table, waiting for the notice that we have, until now, been too much occupied to give them. The most important of these is one of cupied to give them. the thorough studies which the Germans know best how to make, devoted to Water Glass. It is not every one who cares to know anything about water-glass, but those who have occasion to inquire about it generally want to learn all that they possibly can in relation to it and its uses, and Herr Bernhard has covered the ground, in the one hundred and seventy-six pages of his treatise, with admirable completeness. The price of the book is not marked in our copy, but we may suppose that, like the other technical hand-books issued by the same publisher, it will cost, in paper covers, about two, or two and a half, marks — forty-eight to sixty cents. This would be a trifle, in comparison with the value of the book to any one who wanted information on the subject; and it may be remembered that books in foreign languages are free of duty under the present tariff, and probably will be so under the next one; so that importations can easily be made through the Post Office by sending a foreign money-order to the publisher.

Architects have a general idea, derived from their High School studies in chemistry, that water-glass is a silicate of soda, containing more alkali than common glass, and, in virtue of the large proportion of alkali, soluble to a certain extent in water. Many of them may even remember having seen brick or stonework covered with a and a good many more, of mature years, have unconsciously paid an exorbitant price, in their grocery bills, for bottles of a solution of it, to be consumed under the name of "washing fluid," in purifying the family linen. Herr Bernhard, however, informs us that it was not until 1825 that Professor

2"Das Wasserglas," seine Darstellung und Anwendung: von Ludwig Bernhard. Mit dreizehn Abbildungen. Frankfurt a. M. Verlag von H. Bechhold.



Fuchs, of Munich, published a treatise fully describing the compo-"water-glass." It is true that a soluble silicate of soda had been known long before. Even in the seventeenth, and perhaps in the sixteenth, century a "liquor silicii" was known, which had the property of petrifying wood, and a soluble silicate even exists native in England; but Professor Fuchs was the first to bring the preparation of the substance within rational processes of manufacture, and to point out the varied uses to which it is applicable. Naturally, the most important of these uses, in his opinion, was the protection of inflammable material from fire, and the Court Theatre in Munich had, under his direction, its exposed woodwork and painted scenery varnished with it. He soon discovered, however, that the bright, clear varnish of silicate soon grew dull, and scaled off, or dropped away in powder; and, until this day, no one has been able to devise means of preventing it from doing so. Its applications for other purposes have, nevertheless, been multiplied, and the annual consumption of water-glass is now about thirteen thousand tons a year, much of which is used in solution, either by itself or mixed with colors, for painting interior and exterior wood, stone or brick work; while three thousand tons are used annually in soap-making, and

while three thousand tons are used annually in soap-making, and nearly as much in the preparation of artificial stone.

At present, water-glass is usually made from infusorial earth, melted with soda or potash, and dissolved in boiling water; but the finely-powdered quartz from the stamp-mills of gold and silver mines has been successfully employed, in place of infusorial earth. The combination of the silica and alkali is effected by fusing together at combination of the silica and alkali is effected by fusing together at a heat above the melting-point of iron. The glass so made is dissolved in water, and is then usually evaporated to a thick syrup, which is packed in barrels and sold. Occasionally this syrup is found hardened to a tenacious mass, very similar in appearance and consistency to citron. In either of these forms it is easily diluted with water to any desired extent. In a somewhat dilute condition it can be mixed with various mineral pigments, and applied, with much advantage, to brick, stone or plastered walls, cheese or milk being often added to give smoothness and consistency to the wash. For making artificial stone, a still weaker solution is employed, which has the property of hastening the hardening of concretes made with Portland cement, probably by supplying available material for with Portland cement, probably by supplying available material for the network of crystals of silicates and aluminates of lime, which slowly forms itself in the pores of concrete, and gives it the resistance characteristic of it.

One of the most curious uses of water-glass is in the manufacture of soap. For many years, the smooth, oily-feeling silicate syrup has been used by laundresses, in preference to the corrosive "washing soda;" but it is found that silicate of soda or potash can be added to ordinary soap, in some cases to the extent of sixty per cent, without much injury to its quality, and with profit to the manufacturer, out much injury to its quality, and with profit to the manufacturer, who is thereby enabled to sell large quantities of water, combined with the soap and silicate, as soap. Rosin was once much used for this purpose, but has been, we are told, almost entirely superseded by the silicate. It is said, we do not know with how much truth, that the "ready-mixed paints" so popular in this country are often prepared with silicate of soda, which affords means of mixing a large amount of water with a small amount of linseed oil, much to

the advantage of the manufacturers.

A still more modern application of soluble silicates is to textile industries. It is found that these substances not only, by virtue of their alkali, remove greese from cloths or yarns soaked in them, but have the property of destroying the woody parts of flax and hemp, without injuring the fibre. It is, therefore, becoming common to immerse new cloths in successive baths of silicate solution. The first two baths remove greese and oil, and the cloth is then placed for a short time in a much stronger solution. The last bath attracts the bits of woody substance left in the cloth, disintegrating it so that, in the subsequent operations, it falls away in dust; while even silk mixed with the linen or cotton fibres is not injured. On the contrary, the cloth, whether of cotton, linen, silk or wool, is left in a very favorable condition for dyeing.



Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

HOUSES OF MRS. MILLER AND MRS. MCGUCKEN, WEST 76TH STREET, NEW YORK, N. Y. MR. C. P. H. GILBERT, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

ANDREW'S CHURCH, DETROIT, MICH. MESSRS. CRAM, WENT-WORTH & GOODHUE, ARCHITECTS, BOSTON, MASS.

GARDNER'S COTTAGE AND BARN FOR E. R. VAIL, ESQ., WIL-LIAMSTOWN, MASS. MR. F. R. COMSTOCK, ARCHITECT, HART-FORD, CONN.

CHÂTEAU ST. AGIL, FRANCE.

CHIMNEYPIECES IN HOUSE OF R. L. STEVENS, ESQ., BERNARDS-VILLE, N. J. MR. CHARLES EDWARDS, ARCHITECT, PATERSON,

A DRAWING-ROOM MANTEL. MR. E. G. W. DIETRICH, ARCHI-TECT, NEW YORK, N. Y.

SKETCH FOR A COTTAGE. MR. J. H. CRAMER, ARCHITECT, BEAVER, PA.

[Additional Illustrations in the International Edition.]

CENTRAL NORTHERN PORCH OF THE MACHINERY BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

[Gelatine Print.]

NEW ENTRANCE-LODGE, DINORBEN COURT, HANTS, ENG. MESSRS. CHARLES SMITH & SON, ARCHITECTS.

THE entrance lodge which forms one of our illustrations has been recently erected at Dinorben Court, Hants.

AN INGLE NOOK. MESSRS. C. SMITH & SON, ARCHITECTS.

This sketch shows an extension of a living-room in an architect's small suburban house. The length of the room has been increased five feet, by pulling out the old chimney-breast and inserting an iron girder to carry the breast of room over. The additional space thus obtained is fitted up in oak with book-shelves, cupboards, etc., and forms a comfortable and interesting feature in the room.

PROPOSED HOUSE AT HORSELL, ENG. MR. J. HENRY BALL, ARCHITECT.

This house is to be built on the hill overlooking the church and village of Horsell. It is so arranged that every living-room and all principal bedrooms face south. The walls are to be faced with Chobhan bricks and the roof covered with local-made tiles. Simplicity of plan and style are necessary, as the accommodation shown is provided for 1,800%.

DETACHED RESIDENCES AT SURBITON, ENG. MR. R. LANO PEARCE, ARCHITECT.

This villa, now nearing completion, has been erected facing and in St. Andrew's Square. The nature of the site necessitated cellars under the greater part of the building. The front and sides are in red brick and red tile hanging, the front gable overhanging eighteen inches, and having rough-east, etc.; the roofs also are tiled. Clear lead glazing has been justed used in the windows and the cellicities. lead glazing has been introduced in the windows, and the ceilings of the reception-rooms and hall are panelled.



OSTON, MASS.—Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts.

New York, N. Y.—Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.



An Electric Sculpturing Machine.—An instrument somewhat in the nature of a "pantograph," but on a more elaborate scale and intended for use in sculpture work, has been invented by M. Delin, a French maker of statues for churches, who asserts that by means of his new apparatus he can shape a block of stone into a rough copy of a finished figure. He has the two marbles placed upright on revolving horizontal tables, which are so connected as to rotate simultaneously and with very precise agreement. A sculpturing tool, operated by electricity, is suspended from the ceiling before the block to be cut, and so fixed that it advances and recedes in unison with a tracer held before the model in the workman's hand. The tables on which the figures stand may be raised or lowered together at the operator's will, and thus every portion of the mass under the graver can be conveniently reached. — Invention.

Protection of Piles. — The protection of piles against the "teredo navalis" by casings of concrete has been tried with success on the Louisville and Nashville Railroad. According to a paper by Mr. R. Montfort, M. Am. Soc. C. E., the trestles on the railroad were subject to the attacks of the teredo. Many piles were found all eaten off close to the bottom of the water. In 1876 creosote was applied, but ten years later it was discovered that the teredo had commenced its attacks upon the creosoted piles. It was then determined to use a thin coat of cement mortar or concrete applied to the piles from the surface of the mud or sand by a shell of wrought-iron of several sections, each in two segments, so as to be easily taken away. The space between the shell and pile was made water-tight, the water being pumped out, and the concrete poured in. The shell was kept on three or four days to allow the setting, the clamps were then removed, and the shell applied to the next pile. This plan has been found to have protected the pile from all attacks. The concrete casing in one case recorded was covered with oysters, barnacles, etc., and the concrete was found so hard that heavy blows were required to break it. The piles examined were found to be completely free from the teredo after several years. Latterly vitrified-clay pipe has been used to encase the piles for economical reasons. The pipes were fastened together by a composition of pitch and sand applied hot. A test was made with a pile infested with the teredo in a live state. A pipe was placed round it, filled with sand. At the end of twenty-four hours it was found the teredos were all dead, and in forty-eight hours the bodies had disappeared. The utter destruction of the teredo by this means is therefore secured. The sand is inimical to its growth or progress, as the teredo is never found to attack a pile below the surface of the mud or sand into which it has been driven. For further particulars of the process, we refer the reader to Mr. Montfort's paper in the Transa

DISINFECTION OF SEWAGE BY MEANS OF LIME.—The practical employment of lime for the disinfection of sewage, as recommended by Pfuhl, is as follows: In order to render free from danger fresh sewage that may contain the organisms of typhoid fever or Asiatic cholera, it is necessary that lime be added to the sewage in the proportion of, at least, one to one thousand. In this proportion, disinfection is complete in from one hour to one hour and a half. It is necessary that during the addition of the lime the sewage be kept in motion, so that there will be a homogeneous distribution of the lime throughout it, for it has been shown by experiment that in sewage not so stirred, lime may be added often to an extent of three to one thousand, and yet living typhoid bacilli may be detected after two hours, a condition evidently due to the restriction of the activity of the lime, to and immediately about the point in the still sewage at which it was deposited. In practice, it is further to be observed that the disinfectant activity of the lime is frequently interfered with through the presence of precipitating substances, such, for example, as the salts of sulphuric acid. It is also necessary that the lime should be of the best quality and freshly burned, so that in calculating the amount necessary for a given volume of sewage, only pure calcium hydrate will come into the computation.—International Medical Magazine.

BRICKS MADE OF CAST-IRON.—"While I was in Germany last year," said W. L. Burgess, of New Haven, "I came across several walls surrounding some of the public institutions that were constructed out of cast-iron bricks. These bricks certainly have many advantages over the old-fashioned clay bricks, though they may not prove to be superior in all respects. In form and size these bricks resemble our ordinary bricks, but they are composed of cast-iron and hollow. The shell is so thin that the brick weighs less than one made of clay. A wall is built of such material without the use of mortar, and no skilled labor is required in laying them. The upper and the lower sides of the bricks are provided with grooves and projecting ribs, which fit into each other easily and perfectly and form a wall of great strength. There are also two large circular openings in the upper side of each brick, arranged so as to receive projections on the lower side of the brick that is to be placed above it. One of the projections is hook-shaped, which secures a solid hold. A wall of these bricks is put together very quickly. After the wall is built it is covered with paint. This closes all the cracks, rendering the wall air-tight, and prevents the bricks from rusting. The bricks are very durable, and a building constructed of them would be practically fireproof."—St. Louis Globe

WATER-WORKS STATISTICS.—It is almost incredible that the waterworks supplying the cities and towns of the United States should represent an investment of \$430,000,000, or nearly one-tenth as much as is invested in railroads. The miles of water-mains in New England are nearly equal to the miles of railways. There are only sixty-eight water-works in eight Southern States, while the total number of cities and towns in the whole country supplied with water-works is about 1,700. Probably two-thirds of the supply is furnished by the municipalities, and the balance relies on corporate enterprise. The daily consumption per head in London is only thirty-one gallons; Paris, thirty-six, and Hamburg, forty-six. Consumption of water is constantly increasing in American cities. Brooklyn and Washington in twenty years increased more than fifty per cent.; Buffalo, Chicago and Detroit measured the increase at almost three-fold in the same time.— Wall Street News.

Sewer Air and Microbes. — No less than one hundred samples of air from a Berlin sewer have been examined by Dr. Petrie, and on one occasion he is said to have found no organisms in it at all. In another

experiment only one bacterium was traced and three moulds. Curious as it may seem, it would, therefore, appear that drain air, as regards freedom from microbes, is frequently superior to that which we inhale in our houses, and compares very favorably in this respect with the air in crowded reception-rooms. Mr. Laws, commenting on these experiments, says that although the organisms of sewer air probably do not constitute any source of danger, they may contain some poisonous chemical substance capable of affecting the general vitality to a very serious extent. — Invention.

EXCAVATIONS AT POMPEYA, GUATEMALA.—A new Pompeii is said to have been discovered in Guatemala. According to the paper La Union Libero Americana, in a place or village named Pompeya, the remains of a very old city have been discovered and excavations have been begun. At a depth varying between fifteen and twenty feet were discovered large quantities of domestic utensils, pieces of furniture, war weapons in silex perfectly made, and many articles used by the Indians. There are also idols in stone, ornamented with turquoises, fine pearls and other precious articles. Inside the houses many skeletons were discovered, showing that the people who lived in those prehistoric times were of a great stature, most of them measuring seven feet. — N. Y. Tribune.

A Babylonian Curse.—According to Scripture, curses were known from the beginning of man; but the earliest curse the world has authentic record of, is found inscribed on a door socket of King Saegm, of Babylonia, 3800 B. c., in the Assyriological collection of the University of Pennsylvania. The inscription, which has been translated by Dr. Hermann V. Hilprecht, of the University, calls down the vengeance of the gods Bel, Shamash and Nuina upon the bold disturber of the stone. This American collection is said to be exceeded in importance only, by those of the British Museum and the Louvre. It is largely the result of the special expeditions to Niffer on the Euphrates, sent out by the University during the past six years. Part of the collection, including the stone mentioned above, was exhibited at Chicago, where it was awarded several medals.— Cincinnati Commercial Gazette.

ROMAN COINS FOUND IN MASHONALAND. — Africa semper aliquid novi affert. Roman coins have been discovered in King Solomon's mines! A Mashona native, grubbing about near the famous Zimbabwe ruins, came upon eight coins, all in a fair state of preservation, which are undoubtedly Roman. One of the coins bears the legend "Constantivs Caes." How on earth did they get there? There are plenty of theories as to who those ancient gold-seekers were who left the massive circular walls and solid conical towers, the temple fortresses of Mashonaland. In fact, every man is at liberty to make his own theory. But nobody has made one yet which could comfortably bring in Roman coins and Constantius Cæsar. Perhaps Mr. Theodore Bent dropped them on his recent excursion. Roman coins are the sort of thing an antiquarian might carry about with him, and while jolting about in Mashonaland a man might drop anything. — Westminster Gazette.

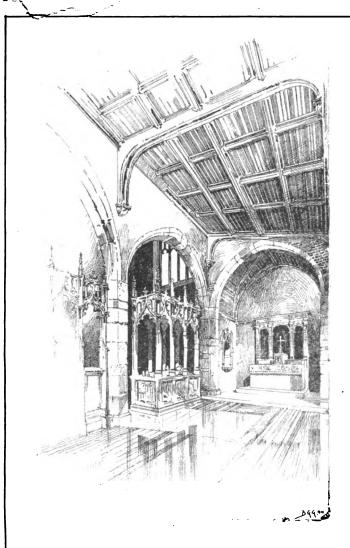
Transparent Bricks for Hot-Houses. — Experiments with glass building-bricks were begun in 1891, by M. Falconier, an architect of Lyons. These bricks are hollow, being blown like bottles, and are given forms — such as cubes, hexagons, etc. — that permit of ready laying. A bituminous cement, with a base of asphalt, is used with them. The bricks serve as double windows, giving protection against both cold and heat; they are good insulators of humidity and noise, and they lend themselves readily to the decoration of buildings, either by their form or color. Many applications are foreseen. The bricks are neater than marble in meat-markets, and especially adapted for bath-halls, hot-houses, hospitals, refrigerating establishments and buildings in which absence of windows would be an advantage. A hot-house of glass bricks is of about ordinary cost, saves fuel and resists hail. — Ashton, England, Reporter.

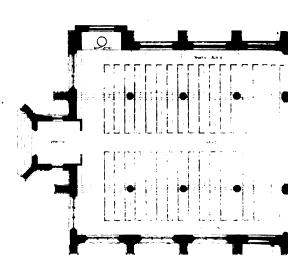
fuel and resists hail. — Ashton, England, Reporter.

Timber Culture in Tennessee is one of the few States that have not been stripped of their timber without concern for future needs and climatic conditions. About fifty per cent of the land in Tennessee is still wooded. There are 26,880,000 acres in the State altogether, of which nearly 13,000,000 are timbered. Only three States in the South have a greater timber acreage — North Carolina and South Carolina and Georgia. As the altitude of the forests of Tennessee varies from 200 to 6,000 feet above the sea's level, woods of every kind known to the United States are to be found there. In value, the oak has the first place, but the ash, of which there are two varieties, the white and the blue, is hardly less important. Even in Tennessee the forests of ash are now found only in districts remote from the railroads, but so rapid is the growth of this tree, that it is being planted as an investment. A farmer who set out a grove of ash trees covering ten acres twelve years ago, now has 12,000 trees eight inches in diameter on an average, and thirty-five feet high. There were no expenses of cultivating, and the ten acres of 12,000 trees are worth at the present time between \$7,000 and \$5,000. Besides oak and ash, Tennessee possesses three varieties of elm, two of gum, two of fir, three of hickory, two of locust, three of maple, two of pine, three of poplar, and two of walnut. Among other trees found in abundance are the beech, birch, buckeye, red cedar, wild cherry, cottonwood, cypress, dogwood, basswood, mulberry, tupelo, sycamore, and the sassafras. Of oaks there are no less than twelve varieties. Cedar, unfortunately, is going very fast. Bucket factories in the State use 5,000,000 feet of this timber every year. Telegraph companies use it almost exclusively for poles. Nearly 1,000,000 feet goes each year to St. Louis, where it is made into fence-rails. The rapidity with which the cedar is being consumed has opened the eyes of some of the friends of the forests in Ten

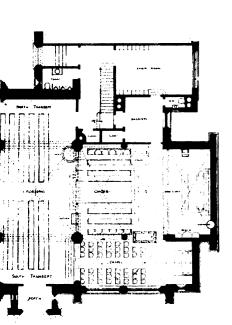
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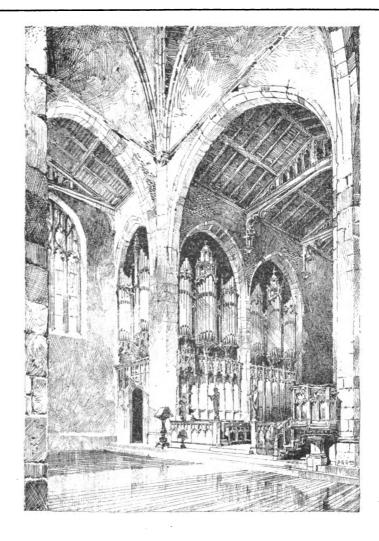








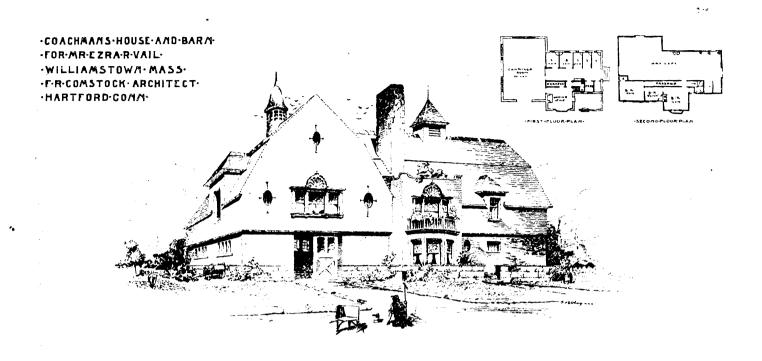


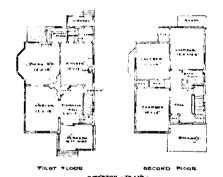




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MERIGAN ARCHITECT AND BUILDING NEWS. JULY 7. 1594. **R**o.967.





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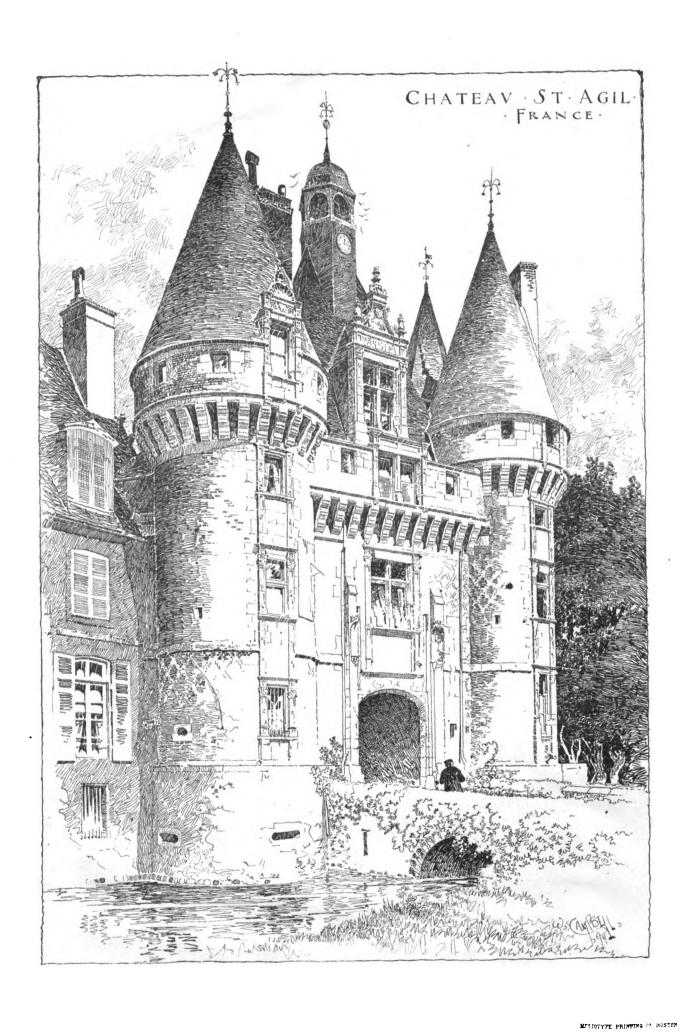
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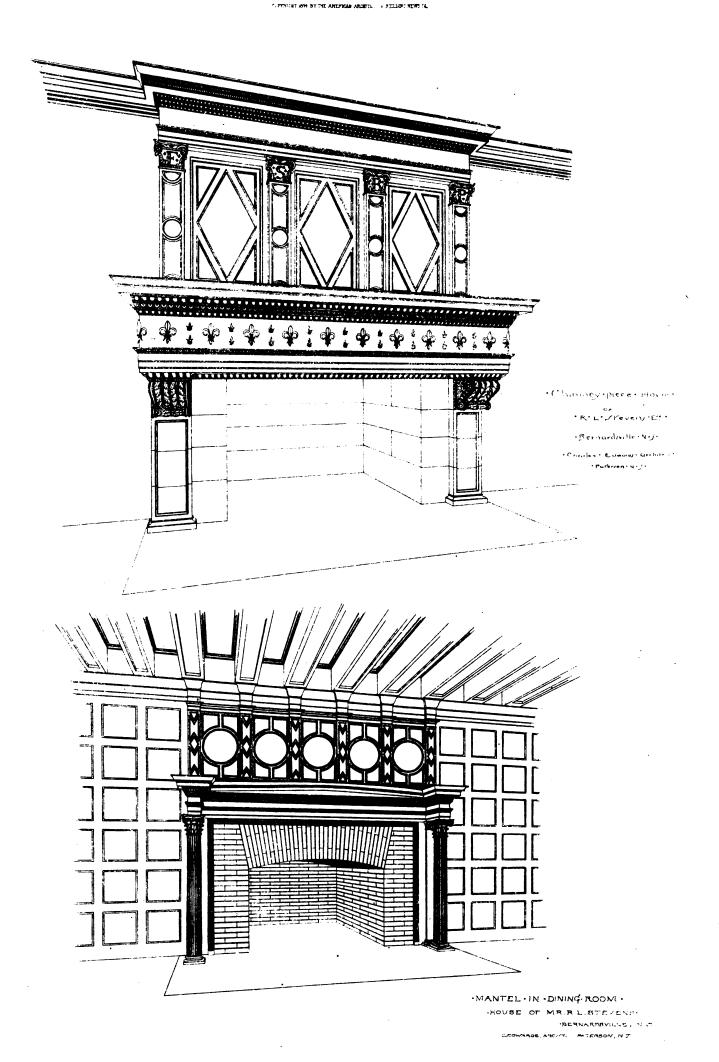
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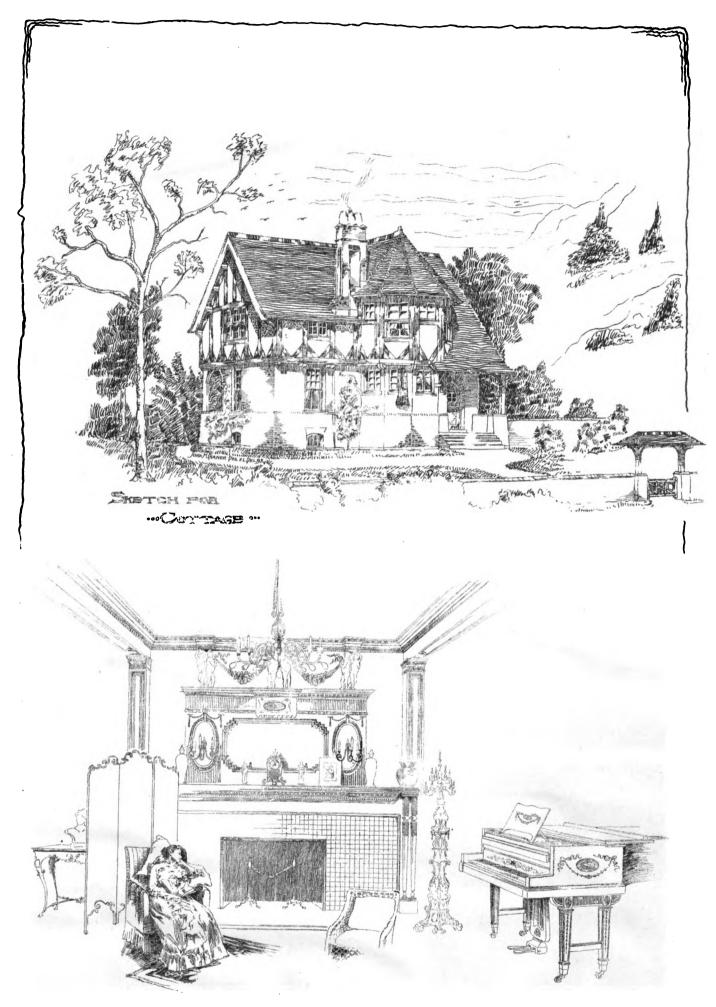
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Drawing Room Mantel

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JULY 14, 1894.



SHMMARY: -

NE of the most curious circumstances connected with the Debs-Sovereign Campaign against the rights and liberties of the American People seems to have been the apprehension felt by the leaders for their personal safety. The least suggestion, that it might be well to put under lock and key the people at whose orders myriads of innocent persons were suffering, was followed by a chorus of threats so prompt and violent as to show that the individuals interested had had already thought of such a contingency, and had prepared beforehand the terrors by which they hoped to avert the danger. We were told that "civil war" would immediately result from placing a check upon the activity of the reckless ruffians whose followers, being, as they said, "beyond their control," were murdering faithful railway officials, plundering freight stations and burning cars by the mile, as if they were not already carrying It generon a one-sided civil war to the best of their ability. ally happens with cowardly persons that the noise with which they denounce those who propose any proceedings against them is proportioned to their fear of such proceedings; and the public will probably note, to its future advantage, the fact that the autocrats who can threaten to "stop every wheel" on a great railroad, and bring many thousands of poor people to misery, unless they—the autocrats—have their private pockets immediately filled with money from the treasury of the road, become wild with terror at the idea of being compelled, by the strong arm of the law, to exchange their lucrative and exciting occupation for the cold solitude of the jail.

NOTHER class of persons, who need the attention of the friends of liberty almost as much as the professional pirates who prey upon our internal commerce, is to be found in the pulpit philosophers who find that their associations and arguments are propounded, with most comfort to themselves, in a place where courtesy forbids any reply to them. During the desperate struggle in Chicago between liberty and order, and the savage despotism of ignorant force led by devilish malice, the worst enemies of decency, and the best friends of the cunning apostles of anarchy, have been the ministers, or rather, that part of them who allowed themselves to be deluded into signing an appeal for a meeting to consider a "compromise" between Debs and his victims. It is strange that men who are presumed to have an insight into character should not have seen that this scheme was simply a device of the Debs gang, familiar to every one who has followed the history of "labor conspiracies, to enable the chief ruffians to escape, in case of need, with uninjured personality from the fray which their machinations had brought about, and even to clothe them with increased lustre in the eyes of the public, and of their ignorant slaves. It is obvious enough that Debs dragged to jail, either peacefully like a coward, or with his clothes torn and his hat

crushed after a struggle with the police, is a very different thing from the mighty Debs, leaving for a moment his "base of operations" at St. Louis or Detroit, to listen condescendingly to "compromises" offered him by a circle of obsequious divines. As the granter of "compromises," although they may be compromises only in name, he retires from the scene, deified by the howling mob as the man who has "wrested" from capital terms somewhat vaguely advantageous to the poor and lowly; he figures before the public as a man to be feared, inasmuch as he can wantonly stop commerce over half the nation, and yet get off scot-free; and, last, but not least, he is sure to be safe from arrest as long as he can protract the negotiations with his ecclesiastical cat's-paws. Such advantages as these are well worth securing, and it is hardly necessary to say that the art of securing them has been long and successfully studied by the professional mischief-makers; but it is most unfortunate that the Chicago clergy should have been such easy dupes of so transparent a scheme, and that anything should have been allowed to interfere with the good old American way of dealing with crime, through the unconditional surrender and suitable punishment of all the criminals.

HERE is one phase of these modern conflicts between organized labor and the original conflicts. ganized labor and the existing state of things to which the labor leaders seem entirely oblivious, and yet it is even now one of the most potent causes of the failure of strikes, and its power grows with the advent of every new labor struggle. Ninety per cent, probably, of all labor can be performed by one man as well and as satisfactorily as by another, after a very short apprenticeship, and the term of this necessary apprenticeship becomes shorter and shorter as the labor becomes more purely manual and less intellectual, that is as it concerns those classes of the community which are most prone to yield to the exhortations of walking-delegates and throw away their daily bread. The work that the world, that society must have done in order that it may exist, will eventually be done, if not by one set of men then by another. The usual outcome of strikes has been this: - As one set of men refuses to work, another set takes their places, only to be replaced by still others at the next strike. The result is that there is a constantly increasing body of men, who have foolishly voted themselves out of one trade, and as a consequence, have had to practise perhaps two or three others, and yet are entirely able and generally willing to go back to their original trade, and, at the first opportunity, take their own successors' places. In no trades is this compulsory training being effected with more rapidity than in the trades connected with rail-roading, which, of recent years, have shown themselves most willing to disregard the interests of the community at large. The reason of the great measure of success that attended the first of the great railroad strikes,—the one which won for Mr. Arthur, the chief of the Brotherhood of Locomotive Engineers, his present reputation,—the Eastern Railroad strike, was because there were practically no locomotive engineers out of work in the country and so the tie-up was effective. But now, thanks to the great railroad strikes during the last ten years at Pittsburgh, Kansas City, Chicago, Buffalo, New York, and elsewhere, there is a large and increasing body of railroad men, who, having rashly forsaken their positions, are tempo-rarily getting their living in other trades, but are always ready to take up their original occupation at the first favorable opportunity. Thanks to this, anything like a prolonged or permanent tie-up is impossible, and organized labor, through its own folly, finds itself driven as a last resource to have resort to open violence and rebellion against the statute law. When labor movements have reached this condition, they have entered on their last stage, for the public will find it the duty of each citizen to prove that a small and misguided minority cannot subvert the condition of things which satisfy the majority.

N important decision in regard to party-walls was given by the Massachusetts Supreme Court the other day. Many years ago, a certain land-owner, who may be called A, built two houses, on Bedford Street, with a party-wall between them, and subsequently sold the houses to different purchasers, without any stipulation as to the use of the party-wall. B, who succeeded to the rights of one of the purchasers, strengthened

the foundations of the party-wall, and added to its height, for his own purposes, paying all the expense of doing so himself. Afterwards, C, the owner of the adjoining estate, built his house higher, using, for that purpose, the party-wall which had already been carried up. The representatives of B demanded of C payment for a part of the cost of the addition which had been made to the party-wall, which C had now utilized. C refused to pay anything, and a suit was brought, which has just been decided in favor of the defendant, the Court holding that there was no stipulation or agreement in any form, binding the defendant to pay for the use of the wall, and that no such agreement could be implied; and that the defendant was entitled to use without payment, in the way he did, so much of the wall as he found standing on his own land. It may be remarked that there is no general party-wall statute in Massachusetts, and no legislation defining the rights of persons who find themselves in possession of a wall built partly on land of another; so that the court probably felt itself obliged to fall back on the common law rule, that every man is the absolute owner of whatever may be built on his land, no matter how it may have come there. Nevertheless, the building of a wall partly on each of two adjoining estates, or even two parts of one estate, indicates that each party receives value from the other, in the form of a saving of expense, and of available land, in return for which he gives the right to place half the wall on his land, and pays half the expense of building it; and it would not be a very violent assumption to consider that the rights and obligations so conceded and incurred attached to the land, so long as the wall built in common was used by both parties. provision to this effect might with propriety be embodied in future legislation, and would have the advantage, not only of preventing the appropriation without payment of other people's labors, but of promoting the construction of party-walls, which, particularly in a city of pile foundations, like Boston, represent, where properly arranged, stability of construction, and great saving of expense, and of valuable room.

THE Massachusetts State Board of Health, acting in concert with the Massachusetts State Board of Health, acting in concert with the Massachusetts Metropolitan Park Commission, has prepared a brilliant scheme for furnishing Boston with a public park of the most attractive kind, by taking possession of the banks of the Charles River as far up as Waltham, clearing away the factories and dwellings which now crowd upon it, and laying out driveways on each side. The tide now affects the river nearly to Waltham, and it is proposed to shut out the sea, and maintain the water-level at a constant point, by building a dam, about eleven hundred feet long, from Boston to East Cambridge, with a lock, by means of which the insignificant navigation of the river can still be accommodated. As the great Metropolitan sewer will soon be in use on both sides of the river, there will then be no longer any excuse for allowing drainage of any sort to enter the river; and if the bottom is once dredged, clear of mud, the water should remain comparatively clean. The advantages which would be derived from carrying out such a plan are incalculable. Not only would the fresh-water lake, eight miles long, furnish an unspeakable relief from the dreary mud-flats, bordered by marshes, which, except at high tide, now occupy the valley of the Charles near Boston, but the improvement of the banks would invite the erection of fine houses on the land bordering the new park. Compared with the other splendid pleasure-grounds which Boston is rapidly acquiring, this water-park would be a very inexpensive affair, and it is much to be hoped that the scheme may be carried out without delay.

MEETING took place the other day in London, which has a rather unusual interest. The Builder prefaces its account of it by saying that "the worm will turn"; the worms in this case being workmen connected with the building trades, who are tired of being ordered about, plundered, domineered over and prosecuted by walking-delegates, and have resolved to see if relief cannot be obtained by concerted action. The building trades in Great Britain are more completely in the hands of the crafty Union schemers than they are here, and it is interesting to read the testimony of English workingmen in regard to the ways in which this subjection has been brought about. The chairman, Mr. Maskell, Secretary of the Fibrous Plasterers' Association, began by saying that the object of the meeting was to consider the subject of the removal of the disabilities under which the vast majority of workingmen

connected with the building trades now labor. He did not think, he continued, that after the speeches of the evening, there would be much doubt in the minds of the public as to the existence of a sort of reign of terror, which the Building Federation had produced among builders' workmen. bers of the larger unions in the building trades only numbered fifteen per cent of the total number of workmen, the other eighty-five per cent being non-unionists, or belonging to the small unions; yet "this handful of workmen, simply because they were organized, had for many years been dictating terms to the whole of the trade, masters and men alike." To show how this dictation was carried on, he mentioned that a workman was present, who was foreman of the London County Council. This man had once belonged to the Union, but had left it; and his former comrades were doing their best to have him discharged: "Day after day," said he, "deputations of workmen waited on members of the Council, and demanded the foreman's discharge, threatening that a general strike would be ordered unless he was sacrificed to them." "If this was not coercion," said Mr. Maskell, "they had yet to learn what was." For his own part, he could not see why a British workman had not a right to live, whether he held a Union ticket or not; and his observation was that the wives and children of free laborers needed bread quite as much as those of the unionist. Another speaker, Mr. Wheeler, describing how coercion affected him, said that his own brother, who belonged to the Union, dared not give him work, because he was not a member; and many others gave examples of men having been refused work by the London County Council, because, on demand, they could not show the Federation's license to work for a liv-Another thought that, if trade-unionism was such a grand thing, it was strange that it did not commend itself to the majority of workingmen. He had observed that the unionists were always saying that the masters were tyrants; but, so far as he could see, it was not the masters, but the unions, that were the tyrants; and he believed that a competent mechanic had a right to work for anybody without being interfered with. After some further discussion, the meeting adjourned, first appointing a committee to devise means for uniting the capable and efficient workmen of the country who were disposed to resist union dictation.

NOVELTY in methods of dealing with architects is reported from England. A certain M- 17 manufacturer," employed an architect to design and build for him a factory, but required him to sign an agreement not to erect more buildings of the kind. Soon after, another jammanufacturer employed the same architect to build a factory for him, and Mr. Hartley, hearing of it, brought suit for an injunction to restrain the architect from doing so, alleging, as a reason, the previous agreement. The case was heard in the Liverpool Chancery Court. Mr. Hartley, in his testimony, said that he did not desire to prevent the architect from building other jam-factories, provided he did not divulge the arrangement and fitting of his own works. The judge said that, this being the case, the agreement which the architect had signed was wider than was needed to give the protection desired; and he saw no reason for granting an injunction. The suit was therefore dismissed, the plaintiff being charged with the costs. Some further particulars of this case would be interesting. If the judge, on the verbal testimony of the plaintiff, decided that the written agreement should be considered to mean something else than its words expressed, he must have the credit of introducing a rather startling innovation into the law; and if not, it is difficult to see how the injunction could have been refused.

NEW journal, of great interest to, we fear, a rather small public, is announced in France, under the name of the Revue Pratique de Legislation et de Jurisprudence du Batiment. It is well known that French architects study, much more than those of this country or England, the law relating to building, which has been treated with great ability in a variety of books adapted for their use; but that the profession should support, or be expected to support a monthly journal exclusively devoted to the subject is a little surprising, and is certainly creditable to the general intelligence of architects in France. The new journal is under the charge of MM. Nicolas Hornbostel and Georges Lecouturier, and is to be published at 13 Rue Bonaparte, at 10 frances per annum.

TOWERS AND TURRETS .- I.

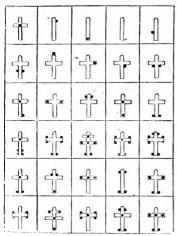


Fig. 1. Different Positions of Bell-towers.

HE tower, which from earliest times has been a material necessity in all military monuments, has become since antiquity either an object of material necessity or, what is oftener the case, of moral necessity and monumental sumptuousness in religious and in certain civil edifices. However its application to the houses of worship of the different cults may have originated, whatever may have been the needs to which it at first responded, it was gradually conceded that, whether of service or not, it added perceptibly to the prestige and

majesty of the sanctuary; and builders adopted it so generally that it was soon impossible to conceive of a church without a tower.

Even in antiquity, the tower was incorporated into the religious monument and sometimes it constituted the entire structure, as in certain Assyrian temples. In India, from time immemorial, the various enclosures of the pagodas have been surmounted by imposing towers, delicately wrought throughout their entire height; these gigantic objects of display were originally, perhaps, means of defense. The famous porcelain tower at Nankin, in China, destroyed in 1864, was a sort of commemorative pagoda.

The Arabic mosque employs the tower in the same manner as the Christian church; the minaret is, like the belfry, the lofty place from which goes forth the call to prayer, with the difference that here the signal is the human voice. The minaret rises at one angle of the mosque or is isolated; it sometimes presents an imposing mass, especially in the countries of

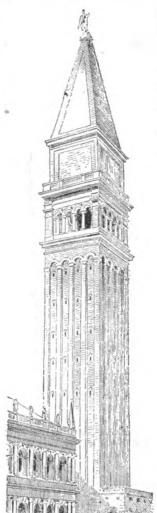


Fig. 2. The Leaning Tower at Saragossa.

Barbary; sometimes, as in Persia, Turkey, and particularly at Cairo, it assumes elegant and graceful forms that make it compare favorably with our Gothic bell-towers.

Christian worship was divided at a very early date into two liturgies, the Greek or Eastern and the Latin or Western. In the Eastern, but little use was made of the tower in purely Byzantine edifices, and when it did exist in these, it was of only minor importance. The same is not true of the Slavic churches and especially of those of Russia (The Lavra of Kiev, the Church of Saint Peter and Saint Paul at St. Petersburg), etc.

But the Latin liturgy was the real source of the sacred tower and Gaul was its birthplace. The Gallo-Roman bell-tower had a double origin, corresponding to two different rôles. Rising above the intersection of the transept and nave, and hollowed out as a lantern, it constituted a sort of honorary crowning; on the front of the façade it served as a means of defense. Of which kind was the tower known to have existed, at the end of the fifth century, at St. Martin's of Tours? We do not know, but lantern-towers are described in other churches of the period. In the seventh or eighth century, bells of great



size were suspended in these structures, and so from that time they became veritable belfries. Only besides the bell-tower, as early as the ninth century, it became the custom to rear others to add to the sumptuousness of the edifice, and at the end of the twelfth or beginning of the thirteenth, when this practice reached its zenith, certain churches, like the Cathedral



Fig. 3. Campanile of St. Mark, at Venice.

Fig. 4. Belfry of Vendôme.

of Chartres for instance, were surmounted by eight towers. Figure 1 will show at a glance the combinations obtained by the different numbers and positions. In the case of a single tower, the place preferred during the Middle Ages was the intersection of the transept and nave and frequently, especially in the fifteenth century, the centre of the façade; two towers, framed-in the façade, a disposition which has been perpetuated down to the present day; three towers were distributed between the façade and the intersection. The disposition of a single tower at one of the sides of the choir was also quite common.

It was in the Middle Ages likewise, that the belfry reached its highest limit both in importance and as an artistic creation. The end of the eleventh century and the beginning of the twelfth witnessed the advent of the octagonal tower and stone spire. The structure then continued to soar higher and to

¹ From the French of Anthyme Saint-Paul and H. Nodet, in Planat's Encyclopédie de l'Architecture et de la Construction.

grow more airy until the fourteenth century, the time of openwork spires, a preparation for which we find in the Norman school of the thirteenth century.

The Renaissance and the Modern period have been fatal to the bell-tower, fully developed specimens of which have been the exception since the middle of the sixteenth century. During the seventeenth and eighteenth centuries it was frequently replaced by the dome. In our day, the belfry has recovered its importance, but simply because of a return toward mediæval traditions. German combinations are less harmonious than those of the French types; but Germany has outstripped all other countries in the height to which it has carried these structures. The celebrated towers of Strasbourg, of St. Stephen's at Vienna and of Notre-Dame at Antwerp are German, or of the German school. The towers of Mechlin and Ulm would have rivalled these, if they had been completed. The present towers of the Cathedral of Cologne, 160 metres in height, have the exact elevation that had been designed for them by the original architect. The Germans continued during and after the Renaissance to build belfries of extraordinary height.

English bell-towers are square and massive, terminating in a platform, and, very seldom, as at Salisbury, in a spire. Their disposition is Norman, that is, a central tower, single or combined with two western towers: the last two are always of equal importance in England, a thing quite rare in France.

Spain displays a great variety in towers as to number, ordonnance and height, but here as in Germany they have been

perpetuated since the Renaissance (Fig. 2).

With few exceptions, in Mediæval times, hardly any tower but the campanile (Fig. 3) was seen in Italy; it is square, starts from the ground and is isolated; generally it is quite lofty and the upper stories are all alike. The campanile was erected in connection with a central dome until the fifteenth century, as appears in Santa Maria dei Fiori, at Florence; in the sixteenth century it disappeared almost wholly and though a few towers were admitted in the ordonnance of the façades, they were insignificant so as not to detract from the prominence of the great dome.

There were also some isolated belfries in France connected with certain abbeys in the basin of the Loire: for example, at Marmoutiers, in Saint-Florent at Saumur, Saint-Aubin at Angers and at Vendôme (Fig. 4); these had already ceased to be exclusively religious edifices, they represented the temporal jurisdiction of the monastery; it was in some sort a feudal capital, as were certain donjons, for example those of the Louvre, of Bourges and of Poitiers.

In the twelfth century, the idea of jurisdiction became so inseparable from that of the tower that the communes of the north of France and of the Netherlands, as soon as they had acquired their liberty, hastened to erect one containing the municipal bell, termed the belfry, a name which came to be applied to the tower itself. On the other hand, as soon as the commune was subdued by the suzerain, the tower was demolished.

There is no belfry in existence antedating the thirteenth century; that of Saint-Antonin, which belongs to this period, is only a small seigneurial donjon, attached to a seigneurial edifice, which was bought by the city corporation in the second half of the thirteenth century. The belfry of Tournai, in Belgium, must have been erected shortly after the granting of the commune charter by Philip Augustus in 1187; it was completed in 1245; the belfry of Valenciennes, in Hainault, was of the same period; constructed in 1237, it fell, after a wretched restoration of it, in 1843. Some of the lower portions of the belfries of Boulogne and Amiens are also of the thirteenth century. The belfry of Saint-Riquier belongs to the thirteenth and fourteenth centuries. That of Béthune, with its pretty wooden crowning, is of the end of the fourteenth, and that of Douai of the fifteenth; the elegant belfry of Arras was built about 1525, and the imposing one at Bergues, in the middle of the sixteenth century. In Belgium, the belfry of Ypres dates from the end of the thirteenth century, that of Ghent from 1315 to 1337, that of Lierre from 1400, those of Nieuport and Alost from about 1485; that of Bruges was begun in the thirteenth century and completed, or rather reconstructed, in the fifteenth; the Belfry of Brussels is also of the fifteenth century (See "Civil Architecture," "Town-Halls," and "Architecture of the Low Countries," American Architect for Feb. 1, 1890, Nov. 4, 1893 et seq. and Mar. 11, 1893 et seq.).

(To be continued.)

THE ESSENTIAL CONDITIONS OF SAFETY IN THEATRES.1 — III.

FIRE SERVICE AND FIRE EXTINGUISHING APPLIANCES.

THEATRE should have an abundant and never-failing supply of water for fire-extinguishing purposes, and there should be plenty of fire-extinguishing appliances always kept in readiness and free from encumbrances.

First, as regards the main in front of the theatre: this should be, eight or ten inch main, and where the city water system has different pressure zones, the main should be connected

with the high-pressure service.

There should be, for outside protection, several large post-hy-

drants distributed around the sides of the theatres.

The size of the service-main supplying the theatre should be, at least, six inches, if attainable, and four inches should be the minimum size. It is still better to run two mains into the building from opposite streets and to cross-connect the same in the building so as to be sure of an ample supply at all times.

Where water-meters are required on these services, there should be a sealed bye-pass gate-valve, to be opened only in case of fire,

as it is unnecessary to meter the water in case of a fire.

There are some cities in which the pressure in the city-mains is at all times ample for fire purposes, and where the stream from fire-nozzles attached to stand-pipes, fed from direct pressure, would reach above the highest part of a theatre building. In other cities, where the Holly system of water-works is arranged, the ordinary pressure of about 35-40 lbs. in the street-mains, is increased in case of a fire, as soon as the fire-alarm has reached the pumpingstation, to 100 lbs. pressure.

In the majority of cases, however, the pressure in the street-mains, suitable for domestic purposes, is insufficient for fire-protection, and it becomes necessary to supply the fire-valves and the sprinklers in the theatre either from fire-pumps, or from elevated open tanks, or finally, from closed tanks with compressed Even the pressure obtained from elevated tanks is not sufficient to produce effective fire-streams, except in the lower parts of the theatre.

It is usual in theatres, to operate the sprinkler system from rooftanks, and the fire-valves under pressure from a large fire-pump, and to omit any connection between the fire stand pipes and the roof-tanks.

Every theatre should, therefore, be fitted-up with one or several powerful fire-pumps, either of the rotary type or of the direct-acting plunger type. The best type of direct-acting pump, the "Underwriter" standard fire-pump, should be selected. For small theatres, the pump should have a capacity of 500 gallons per minute, equivalent to 2 fire-streams; medium sized theatres require a fourstream pump, which is able to throw 1,000 gallons per minute, while large theatres should have either the six-stream pump or two fire-pumps of smaller size. These pumps should ordinarily draw their supply from a large suction or reserve tank located in the basement the theatre, and supplied from the street mains, but they should be so connected that they are able to draw directly from the street-main in case of fire. The fire-pump should also be used to feed the open roof-tanks for the sprinkler system. It should be kept in working order, and tested at least once a week. During perform-ances, steam under high pressure (at least 50 lbs. per sq. in.) should always be kept on the pump to have it ready for instant service.

There should be numerous fire stand-pipes distributed throughout the theatre, at least one on each side of the proscenium-opening on the stage, at least one on each side in the auditorium, one in the corridor near the stage dressing-rooms, one in the property-room, one in the carpenter's shop and others as may be required. Each stand-pipe should have outlets in each tier of the auditorium, and likewise in the under stage, on the stage, in the fly galleries and in the rigging-loft. Each outlet should be provided with standard fire-valve, and with 50 feet of fire-hose with hose-coupling and fire-nozzle always attached to the valve.

The hose should be of a suitable and approved quality, either rubber-lined cotton or unlined linen hose, and both kinds should be able to stand a pressure of several hundred pounds per square inch without leaking or bursting, and should be tested before acceptance. Some of the unlined hose sold in the market leaks like a sieve, and even much of the rubber-lined hose as used for inside fire-protection is of poor quality and utterly unfit for use. I saw the story related somewhere, though I cannot recall now where, that a dealer in fire-hose once asked a purchaser whether he wanted the hose for actual use, or merely "to hang up" to satisfy the Underwriters' inspectors. Whether the story be true or not, it points out a moral and lesson, which those who fit up theatres should bear in mind when purchasing for here were thought the story because of the story bear of the story

The hose is ordinarily kept on hose-reels, but it is better to fold it up in swinging hose-racks, or to hang it up on saddles, hooks or pegs, in such a way that if taken out for service it does not twist or kink. There should be at each fire-valve suitable hose spanners. All stand-pipes should be kept clear from obstruction and the access to them should not be blocked. The fire-pump should be fitted with automatic regulator, so that immediately when a fire-valve is opened,

¹ An Essay on Modern Theatre Planning, Construction, Equipment and Management. By Wm. Paul Gerhard, C. E., Consulting Engineer for Sanitary Works. Continued from No. 967, page 8.



the pump is started in action. An efficient substitute for fire-hose and play-pipes consists in the use of so-called "Monitor" nozzles, attached directly to the stand-pipes, which can be turned vertically as well as horizontally, in all directions, and are so balanced as to remain in position while the stream plays. These special fire-nozzles are applicable in particular to the protection of the theatre

A separate and distinct system of automatic sprinklers, with fusible plugs, supplied from a fire-tank on the roof, and not connected in any manner with the stand-pipes, should be provided. The sprinklers should be installed above and around the prosceniumopening, on the ceiling or roof of the stage, under the rigging-loft, under the fly galleries and under the stage, at such intervals as will protect every square foot of stage. Sprinklers should also be installed in the carpenter and paint shops, in the store-room and property-room and in the boiler-room. It is desirable to provide sprinklers in all dressing-rooms, and where the loft over the auditorium is used for any purpose, this should also be so protected.

The sprinkler system should be provided with one or several outside fire-department connections to which the fire-engines may be hitched, and with automatic inside and outside fire-alarm. The fire-tank should have a low-water alarm that will ring a bell in the pump-room. opening, on the ceiling or roof of the stage, under the rigging-loft,

pump-room.

Sometimes the stage is protected by a perforated pipe in place of the automatic-sprinkler system, and the valves controlling the flow of water to the rows of pipes are operated from the same place on the stage where the fire-curtain, the stage-ventilator and the auditorium vent-registers are operated.

In addition to the fire-valves and the sprinklers, each theatre should have a number of portable chemical or compressed air hand fire-extinguishers, and a large number of fire-pails or buckets. The fire-pails should be hung on hooks, or set on shelves, and placed on the stage, in the fly galleries, in the rigging-loft, under the stage, and on all the tiers of the auditorium, on both sides of the theatre. Fire-pails should be painted a bright red and marked "For fire." They should be constantly refilled, and must not be used for other purposes. Sometimes so-called "insurance" or "chemical" fire-pails are used, which contain a non-freezing, fire-extinguishing solution, in liquid or in powder form, and which are protected by tinfoil against avancation protected by tin-foil against evaporation.

On the stage there should also be large casks of water, of from forty to fifty gallons capacity, to refill the pails and to form a supply for hand force-pumps. Moreover, there should be provided wet sponges or swabs on long poles, wet blankets, asbestos sheets, asbestos gloves, boxes of sand to extinguish burning oil, various lengths of fire hook-poles, etc.

Finally, there should be on each floor of the auditorium, on each tier of the stage, and in the corridors dividing the stage proper and the dressing-rooms, fire-axes with pick heads, axe-brackets, and knives for the use of the firemen and the theatre employés.

Steam-jets or nozzles for extinguishing fires may be fitted-up in increase into correct and in the rigging last but not neither on the stage.

inaccessible corners, and in the rigging-lott, but neither on the stage nor in the auditorium should steam be used as an extinguisher, as it would tend to increase the fright and confusion during a fire or

LIFE-SAVING APPLIANCES.

When a fire breaks out in a crowded theatre, the first thought should be the safety of the audience and of the people in the stagehouse, and the saving of property or of the building should be a second consideration. The fireproof curtain and the stage-ventilator may be classed among the life-saving appliances. We may also tor may be classed among the life-saving appliances. We may also consider as arrangements tending to save life, the provision of plenty of wide aisles, and of numerous fireproof stairs and exits.

plenty of wide aisles, and of numerous fireproof stairs and exits. The auxiliary lighting of the latter may also be considered a necessary feature for the saving of the audience.

Special life-saving appliances, such as scaling-ladders, extension-ladders, a large jumping-net, a chute or flume-escape, rope or pulley-escapes, smoke-respirators, are generally carried by the fire-brigade. Some of these, for instance, the jumping-net, may with advantage be kept in readiness at each theatre, to assist in saving life.

WM. PAUL GERHARD.

[To be continued.]

HUMAN LABOR AT GREAT ALTITUDES. — Investigation among the workingmen on the Peruvian Central Railroad has brought some curiworkingmen on the Peruvian Central Railroad has brought some curious facts to light concerning the capabilities of men to labor in rarefied atmosphere. The line starts at Lima, in latitude 12 degrees, and the highest point reached by the road is at the tunnel of Galeria, which is 15,045 feet above sea level. From deductions made by the investigators it appears that the men were able to perform a fair "sea-level" day's work at any place along the route where the altitude was not greater than 8,000 or 10,000 feet, providing they had gradually worked up to that height from lower levels. At altitudes above 10,000 feet and under 12,000 the amount of work performed by each man showed a sudden falling off of from one-fourth to one-third, and at from 13,000 to 15,000 feet, 100 men could do no more work than 50 would at sea level. — Cincinnati Commercial Gazette.



ROGRESS is often hampered these days in St. Louis, by neonla ---in St. Louis, by people who have never been known to make the world any better off by their presence in it. There are property-owners in the city, who make themselves cobnoxious by resisting all improvements which concern

their respective holdings. A certain individual, a woman, has seen fit to resist the Street Improvements Law, one of the wisest legal regulations that was in force in this city. It gave more power to the city in making street improvements than it possessed before its enactment. It proved a most efficacious weapon for striking down provincialism, and reconstructing streets that were badly in need of it. While the good work was in progress, the woman in question appealed to the courts and her petition is being considered by the Supreme Court of the State of Missouri. The consequence of this is that improvements of all kinds, so far as the streets are concerned, have come to a standstill, awaiting the court's decision. single appropriation for street reconstruction has been asked for by the Municipal Assembly since this state of uncertainty has come Things will remain thus until a great deal of red tape has been unwound, prior to formulating a new bill, if the old one is declared unconstitutional.

The Stone Boulevard Law was recently declared unconstitutional, and, in consequence, a number of the finest West End streets that were set apart for the exclusive use of carriages, and called boulevards, are now the main arteries of travel for coal-wagons, garbage-carts and furniture-vans. The Republican is, unquestionably, the best form of government, but in our country every day we can see it most woefully abused and advantage taken of its liberality. The city has not forgotten to charge up to the property-owners the maintenance as "boulevards" of what are now "streets." Our ineffimaintenance as "boulevards" of what are now "streets." Our inefficient municipality grabs everything and gives nothing. Even while the Boulevard Law was in force, the so-called boulevards were nothing but ordinary streets. They were not improved more than the other streets ought to be. They were merely macadamized streets, with a little gravel thrown on, rolled down, and badly maintained. They were distinguished from other thoroughfares by the fact that no business wagons were allowed to travel over them. This regulation was repeatedly broken, yet the offenders were dismissed in the police with a mere admonition

Work on the new city-hall has been stopped for an indefinite period. The city is in want of funds. No more bonds can be issued as the limit of the bonded indebtedness, which has been defined by law, was lately reached by the issue of \$2,000,000 worth of gold bonds. These were taken by two New York firms. The building will be boarded up, allowed to go to rust for awhile, and then a large amount of money must be spent for restoring it to its forther condition, and completing it. An immense sum of money is needed for numerous urgent improvements, and in these hard times the city for numerous urgent improvements, and in these hard times the city government will find it a most difficult task to obtain it. A special tax has been proposed as the only remedy, and this will, undoubtedly, be resorted to in the end. The sum of \$1,500,000 will be needed to complete the city-hall, and several millions will be required for the new city hospital. A new union market, a new courthouse, a large addition to the insane asylum, a poor-house, several large viaducts and miles upon miles of street reconstruction are urgently needed. In all, \$15,000,000 would hardly pay the bills. Let it be understood that St. Louis is not bankrupt by any means, but the city needs money and a great deal of it.

Major Murphy, St. Louis's street-commissioner, one of the most energetic men connected with the municipal government, is greatly handicapped in the performance of his duties by adverse legislation and unprogressive property-owners, but the facts that he is a Democrat and the city administration Republican show that he holds his office on account of his real value and ability. His latest scheme is His latest scheme is a most admirable one, and, if carried out, will prove a benefit, not only to St. Louis, but to all large cities of the country. It is nothing more nor less than that a convention of street-commissioners or commore nor less than that a convention of street-commissioners or commissioners-of-public-works be held yearly for comparing notes as to cost and methods of street and public improvements generally. The idea has, undoubtedly, occurred many times to the minds of some people, but it remains for Major Murphy to bring it to a realization. He has received most enthusiastic replies from the mayors and other officers of the chief cities of the Union. Matters have progressed so far that the time and place have been selected for the first meeting of the convention, which will be held in Buffalo, N. Y., in September. It seems that Buffalo has done more street reconstruction than any city in the country of late, and it has been

¹ For a detailed discussion of the water-supply and fire-protection of theatres, I refer to my paper on the subject, read at the meeting of the New England Water-Works Association, June, 1894, and published in the Journal of the Association.

selected chiefly for this reason. These conventions certainly ought to be of the greatest benefit to the various cities. Then there is no city which has not original methods that are unknown to others and will benefit them. The street-sweeping problem is one of the most serious with which the convention will have to grapple, and it is the intention to make this one of the principal topics of discussion.

Most of the theatres of St. Louis are south of the retail-business section of the city, and several miles from the residence district. The inconvenience of such location is readily apparent. The ice has been broken, however, and two theatres will be built in the West End. One will be built on Olive Street, near Grand Avenue, and for this, Mr. G. Becker, a local architect, has just completed the plans, in which some novel ideas have been introduced. The style of architecture will be modern Italian. The first story will be of Bedford (Ind.) stone, and the remainder of buff Pompeiian brick, with stone and terracotta trimmings. The interior will be something entirely new here in theatre architecture, comprising a parquet surrounded by private boxes, grilled and railed, of easy access by several passageways, so arranged as to give a full view of the house, and yet assuring almost absolute isolation for the occupants of the boxes from the general gaze of the auditors in the parquet and circle. Also on the first floor there will be a large foyer, much after the plan of that in the Grand Opera House, Paris. One feature, which will be entirely new in American theatres, will be the entrances. There will be no less than eight, with two carriage-drives at each extremity of the theatre front. Besides the parquet, there will be a family and general balcony, in all two tiers above the parquet. On the roof, there will be a summer-garden for light performances.

A second theatre will be built in connection with a hotel on Jef-

A second theatre will be built in connection with a hotel on Jefferson Avenue, extending from Locust Street to Washington Avenue. The entire building will be very handsome, seven stories high, and built of white stone. Messrs. Kirchner are the architects of

the proposed structure.

The St. Louis Chapter of the American Institute of Architects some time ago held an exhibition of the work of its members at the Museum of Fine Arts. The exhibition attracted a great deal of attention, as the great ability shown in the drawings, plans, etc., was a surprise to many, not that St. Louis architects are not capable of fine work, but in this case their efforts surpassed the general standard, if such can be defined. The work of Mr. Partridge was widely commented upon for its true feeling. Many of the drawings were of buildings already erected in this and other cities by local architects, while others were fancy sketches or copies of French masterpieces. Many of these were delightful, and brought to our minds most forcibly the close alliance between true art and architecture. We could not help but notice in this exhibition, the rapid strides that the profession is making in this country. Foreigners are always reminding Americans of this fact, but it has seemed to become so natural to us that we do not realize it. The cold, rigid, and meaningless architecture we inherited from England, of which there are still many examples in the older cities of the country, has given way to one in which exists the refined and well-trained fancy of him who is at once the artist and architect. The influence of the French school is apparent, combined with happy notions of our own.

The St. Louis Artists' Guild recently held a most interesting exhibition of the work of its members at the Museum. The exhibitions are held annually, and art lovers always look forward to them with a great deal of pleasure. Mr. R. P. Bringhurst, the sculptor, of whom St. Louis is especially proud, exhibited three specimens of his work, the most successful of which, strange to say, was of a utilitarian nature being the figure of a woman holding an electric-light in each hand. This is meant for a newel-post or other place in the hall of a private residence. Mr. Holmes Smith showed some of his water-colors, chiefly sylvan in character, a decided departure from his usual work. Mr. Partridge, whom we mentioned above, is a member or the Artists' Guild: his water-colors are delightful, and possess the great refinement and taste to be found in his architectural work. A painting entitled "The Smith and the Smithy," executed by Mr. Berneker, attracted a good deal of attention, chiefly on account of its fullness of color, fine detail, and vigorous treatment. Miss Hoke's miniatures were much admired. Mr. Von Salza showed some of his local and European work. This artist is a recent valuable addition to the art circles of St. Louis, and his residence here is due to the solicitation of Prof. Ives, Director of the Museum of Fine Arts. The latter, by the way, never lets an opportunity pass to promote the art interests of St. Louis in every way in his power. The fact that he was the Chief of the Fine Arts' Department at the World's Fair is the greatest possible testimony to his ability, both executive and artistic.

One of the handsomest buildings that is nearing completion in St. Louis at the present time is the Columbian Club-house on Lindell Avenue. Its membership is made up of the leading Hebrews in the city. The structure is Italian Renaissance in style, and is built of buff brick with buff terra-cotta and Cleveland bluestone trimmings. Mr. Alfred Rosenheim is the architect. The distinctive features of the building are the grand banqueting-hall on the second floor, which measures 50 x 110 feet, and will accommodate six hundred banqueters at one time; and the ballroom on the third floor, which runs the entire length of the

building and will be the finest in St. Louis. On one side of the ball-room is a large loggia with projecting boxes, the same idea being here carried out which distinguished the banqueting-hall in the New York Building at the World's Fair. The furnishings of the new building are very elaborate. The entrance-hall on the ground floor will be in the style of the First Empire, being done in green and gold. The ladies' reception-room will be in white and gold, while the gentlemen's will be in the style of Louis XVI. The ceiling of the latter is divided into two fresco panels, entitled "The Progress of Art," and done by a St. Louis artist. The rest of the structure is beautifully furnished and decorated in the various styles, and it is evident that no money has been spared in the construction and furnishing of the building.

The Chicago, Burlington & Quincy Railroad recently celebrated the opening of its St. Louis terminals and the Alton bridge. It might be stated at the outset, that this railway has expended in the neighborhood of \$5,000,000 for an exclusive entrance into the city. The company's yards at Mound Street are the most extensive and improved in the country. The rock-ballasted road-bed is laid with heavy rails and ties, and the wagon-ways between the tracks are laid with granite blocks. The Broadway Station, for suburban travel only, is at the yards. The main freight station, which is also said to be the largest in the country, is at Franklin Avenue, immediately south of the yards. The company's entrance into the city is from the north, being double-track from Portage des Sioux, St. Charles County, to the Mound Street yards. At Bellefontaine Junction, a double-track branch-line runs to the suburban town of Alton, Ill. Although the double-trackage is not more than twenty miles long, in this short distance two of the greatest rivers in the world have to be crossed, the Missouri and the Mississippi; the former flowing into the latter only about four miles above the northern city limits of St. Louis. The bridge across the Missouri at Fort Bellefontaine is owned by the railway company, while the drawbridge at Alton, crossing the Mississippi, is owned by a private company. On May 1 both structures were opened to the public, and the day was declared a holiday at Alton, where the celebration took place. The railway on the opening day inaugurated its suburban service. Alton is the most beautiful of St. Louis suburbs, being finely located on the bluffs overlooking the Mississippi River.

The great coal-strike is affecting St. Louis most seriously, from The great coal-strike is affecting St. Louis most seriously, from the fact that the city is entirely dependent upon the Illinois bituminous coal-fields for its fuel-supply. There is but one city in the United States which uses more soft coal, and that is Chicago. The consumption is about 2.500,000 tons per annum in St. Louis, while the anthracite coal figures up but 100,000 tons per annum. All coal insurance was a great leaf to the consumption are very leaf horse and a great many stage plants have supplies are very low here, and a great many steam-plants have been compelled to shut down entirely. At High-service Pumping Station No. 2 of the water-works system, the boilers are being altered so that oil fuel can be burned. Of course, the city will spare no expense to keep all the water-works in full working order, for, if they were shut down, it is readily apparent that an incalcula-ble damage would be done to the city and its interests in many The Illinois bituminous coal-fields are only a short distance from St. Louis, being not more than fifteen miles from East St. Louis, Ill. The average supply from this section for the St. Louis plants, which are among the largest coal users in the city, are also fitting their furnaces for burning oil. A great deal of coal is being imported from Tennessee, Kentucky, and the Kanawha district in West Virginia, but at greatly advanced prices. Bituminous coal is now quoted in some parts of the city at thirty cents per bushel, while for years past the ruling price has been in the neighborhood of seven cents. The fact has come to light that bituminous coal from Pennsylvania, where the strike originated, is now being shipped to St. Louis, while only a few miles from the city the miners are so loyal to the cause that not a bushel can there be obtained. As far as the mines supplying St. Louis are concerned, work will soon be resumed, because sentiment is now against the men for throwing other people out of work by paralyzing the numerous and varied industries located here.

President of the Board of Assessors, A. H. Fredericks, recently transmitted to Mayor Walbridge the following abstract of the taxable property in the city of St. Louis:

New Limits. — Real estate, \$56,209,610; personal property, \$3.908,020; exempt from city tax, \$1,600; subject to school tax, \$59.117,630.

Old Limits. — Real estate, \$265.344.110; personal property, \$41,102,970; subject to school tax, \$251,237,470; exempt from city tax, \$11,590.

Grand Total. — Real estate, \$321,553,720; personal property, \$45,010,990.

Total subject to State tax, \$308,406,300; total subject to school tax, \$310,355,100; total subject to City tax, \$310,341,850; total exempt from City tax, \$13,190; Foreign Insurance Companies exempt from State tax, \$1,048,880; steamboats subject to special tax, \$639,850.

The State Board of Assessors has been seriously considering the question of assessing all property at its full value. The advantages of this over the old method are readily apparent, and it will doubtless be adopted in the next general assessment.

REMUNERATION FOR DESIGNS NOT CARRIED OUT.

FREQUENT duty of the architect is to prepare designs for schemes or buildings that are never, or only partially, carried out, and for which he cannot, in the ordinary course of business, fairly make a claim. Every company promoter needs the service or assistance of the architect or engineer in preparing any large scheme. A grand hotel, the erection of a pier or winter-garden, workmen's dwellings or some other building, requires an architect before directors enlist the assistance of the public or obtain school must have plans prepared to enable them to obtain tenders, and the owner of commercial premises who contemplates an extension requires his crude ideas to be put into shape before he can proceed; but all these undertakings are naturally of an uncertain kind, and are dependent on ulterior conditions of obtaining land, securing rights, shareholders and funds. Unless there has been an agreement with the architect as to his appointment and remuneration, should any unforeseen circumstances arise, he has a poor chance of making a legal charge for his skill and labor. The company or committee may be dissolved, and the members will repudiate their responsibility as individuals. A company is a corporation essentially different in its constitution from a partnership or firm for all purposes of contract and an architect in dealing with a company is a contract and an architect in dealing with a company is a contract and an architect in dealing with a company is a contract and an architect in dealing with a company is a contract and an architect in dealing with a company contract and an architect in dealing with a company contract and an architect in dealing with a company contract and an architect in dealing with a company contract and con for all purposes of contract, and an architect in dealing with a company should insist upon a properly-drawn contract by deed, under the seal of the company between himself and them. We often hear the seal of the company between nimeer and them. We often near of an architect taking his instructions from a secretary or a member of a committee upon letters signed by the secretary,—a course which has no binding force. The signed letter is no contract; it may not have been authorized by any resolution, and is not, therefore, binding upon the company. How often we hear of inexperienced men being led into a trap in this way; how many architects have failed to recover their fees after devoting months — perhaps years — of assiduous labor to the requirements of the company! Corporations of towns are equally in the same position: they can only contract under their common seal, and, therefore, any instructions a professional man receives from a chairman of committee, or from the town clerk, or even the mayor himself, will not be of any binding force in law in case of any dispute. Nay, a resolution of the council will be useless, if it is pleaded that there was no agreement under seal. The same precaution is necessary in dealing with any building-committee. An architect may devote many months in the preparation of designs for say a church; he may receive in the preparation of designs for, say, a church; he may receive instructions to make alterations or a fresh design, prepare plans to receive the sanction of the Church Building Society, or the architect of the Incorporated Society for Promoting the Building of Churches; yet if he does not obtain an official recognition of his appointment from the chairman of the committee, he may find, should a new committee be formed, that his services are disputed, and that he has no legal claim on them. A recent case of an appointment of an architect to carry out a proposed enlargement of the church at Clacton-on-Sea came before Mr. Justice Charles in the Queen's Bench Division the other day. The architect sued the honorary secretary of a building-committee formed to carry out a church enlargement, to recover a sum of £79 for designs which he had prepared request of the committee. It appears from the evidence that the instructions of the committee were to alter one aisle of the church, at a cost of £1,000. In making the plans, it was necessary to show the whole edifice, as it was the idea, if funds permitted, to enlarge the whole church to seat 1,000 people instead of 600. The estimate for carrying out this design was £10,000, and the architect occupied for carrying out this design was £10,000, and the architect occupied some twenty days in preparing his designs. Evidence was called to show that the architect's claim was within the charges fixed by the custom and usage of the profession. The judge, however, pointed out that although these charges were customary ones in the profession, and had been so proved, the Courts had refused to be bound by them, and in every case it was a question for the judge and jury to decide what was a reasonable and fair remuneration for the work done in each particular case. This ruling has confirmed the dictum that no professional schedule of charges can be made binding on those who employ architects, and who have not agreed to such charges. The defendants admitted their liability for a reasonable amount, and paid £25 in Court; but the Judge gave judgment for the plaintiff for £50, including the sum paid into Court. In this instance, the architect had been instructed to prepare plans for an enlargement of one aisle, but had been induced to show a design for the whole building. The question is a difficult one as to how far an architect is justified in making a complete design. Yet it is often absolutely necessary to do so, so as to enable any judgment to often absolutely necessary to do so, so as to enable any judgment to be formed of the whole. If it was contemplated to enlarge the whole edifice, there was every reason for making a complete design. But according to the ruling of the Courts, it is left to the judge and jury to say what a fair and reasonable remuneration should be. In short, the architect can make a complete design for a building or alteration, but he cannot legally claim for more than the portion he was first asked to submit. The lesson is one of instruction and warning to the profession. They often prepare elaborate and costly schemes, for which they have no legal claim when there has been no agreement. Sometimes several sets of plans are made, to meet with the views of different parties or individuals, but all this labor must be performed at the risk of the architect if he has not

thought fit to make a special agreement with those who employ him. In another dispute, plans for a Roman Catholic church had been prepared by an architect of Edinburgh, which were approved by the authorities; the architect died, and the defendant refused to arrange a suitable remuneration for the services rendered. It was explained in defence that the selection of plans did not lie with defendant, and that the sketch-plan was prepared only to assist him in laying his ideas before the authorities. We could mention other instances where architects have taken immense trouble to assist individuals and committees in their projects, but have found too late that they have no legal claim for remuneration, except, indeed, whatever sum the promoters are pleased to give them or the Court to award. Prospective designing is badly-paid work. A good deal of it, we know, is done by young members of the profession, whose main object is to keep their names before the public, and who are often willing to give their services gratuitously at first, hoping to obtain their reward when the project is carried out—perhaps it may be in the shape of an official appointment.—The Building News.



Contributors of drawings are requested to send also plans and a [Contributors of drawings are requested to send also proved full and adequate description of the buildings, including a statement

CARRIAGE ENTRANCE TO HOUSE OF C. P. HUNTINGTON, ESQ., 57TH ST., NEW YORK, N. Y. MR. GEORGE B. POST, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

TREMONT TEMPLE, BOSTON, MASS. MESSRS. BLACKALL & NEW-TON, ARCHITECTS, BOSTON, MASS.

THE building known as Tremont Temple and occupied by the Baptist Church of the same name, has been three times destroyed by fire, the last time being on the 20th of March, 1893. The building to be erected will be entirely new throughout, and will be considerably higher than the old structure. The internal arrangement comprises a large hall known as the Meionaon, extending from the comprises a large hall known as the Meionaon, extending from the basement through the first story in the rear; the main Temple auditorium, raised one story above the street level; and three stories of offices over the entire area above the Temple proper, a portion of the upper two stories being occupied by a large Reception or Social Hall. There are also a few offices arranged on the street front at the level of main-floor and balcony, and there are two small stores on the ground floor. The exterior is to be of Indiana limestone through the first two stories the columns about the control entry. on the ground floor. The exterior is to be of Indiana limestone through the first two stories, the columns about the central entrance being of iron. The upper portion of the building is entirely of brick and terra-cotta. The diaper-work of the wall making the auditorium is to be executed in fifteen different colors, the details being made of white terra-cotta, and the brickwork of the returns and of the fifth and sixth story of a pale, warm buff tone. The balcony shown on centre of façade will be deeply recessed, with enamelled terra-cotta panelled soffits.

The interior of the auditorium is to be arranged with large stained-glass windows, giving light from each side. The finish about the organ-archway will be of marble up to the spring of the arch, the ceiling and the ornamental treatment of the walls to be carried out in stucco. The organ-case will also be of stucco, and as nearly

out in stucco. The organ-case will also be of stucco, and as nearly as possible the organ is to be made fireproof, this portion of the building being the location of the origin of each preceding fire. The gallery and balcony railings and the soffit of the organ architecture will be of because way will be of bronze.

The construction of the building will be as nearly fireproof throughout as it is possible to make it. The three floors above the Temple proper are to be supported by heavy plate girders, six feet deep with a span of seventy-two feet. These are supported by 18" x 28" Z-bar columns, built into the piers of the side-walls. The floor-beams are filled in with proper targeted and construction X 28" Z-bar columns, built into the piers of the side-walls. The floor-beams are filled-in with porous terra-cotta, end construction. The partitions throughout are of one and one-half inches solid plaster on expanded metal lathing, the building being plastered throughout with Windsor cement. The foundations, over a considerable portion of the area, are carried thirty feet below the side-walk to allow for a large engine and boiler room. The lighting will be almost entirely by electricity. The offices are reached through the side-entrance on the right, leading to two Graves' elevators with a speed of 350 feet a minute. vators with a speed of 350 feet a minute.

The Temple proper is to seat about 3,000. The Meionaon seats about 800, and the Social Room has accommodation for about 300. There are three lines of staircase from top to bottom, and from the Temple proper there are to be twelve lines of exit, besides liberal fire-escapes on each side and at the rear to the adjoining building.

INTERIOR OF THE SAME.

[Additional Illustrations in the International Edition.] MONUMENTS TO RENAUDOT AND TO BARYE, PARIS, FRANCE. THESE prints are copied from La Construction Moderne.

SKETCHES AT RAGUSA, ITALY.

This plate is copied from Zeitschrift für Bauwesen.

ENTRANCE TO THE NORTHAMPTON INSTITUTE, NORTHAMPTON, ENG. MR. E. W. MOUNTFORD, ARCHITECT.

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HOUSES AT NYMPHENBURG, BAVARIA.

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STAIRCASE OF THE JUNIOR CONSTITUTIONAL CLUB, LONDON, ENG. MR. R. W. EDIS, ARCHITECT.



BOSTON, MASS. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts.

New York, N. Y.— Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.



A BANQUET COOKED BY ELECTRICITY. — On Friday evening last, the City of London Electric Lighting Company, Limited, gave a large banquet at the Cannon-street Hotel, for the purpose of demonstrating the feasibility and convenience of cooking by electricity. Before the dinner commenced, the guests were invited to see the apparatus at work, and had the opportunity of inspecting the joints, poultry, fish, vegetables, etc., frying and simmering in the electric ovens and saucepans. A temporary kitchen had been set up close to the dining-room; this was, of course, perfectly easy to do, as there were no flues to provide for the escape of the products of combustion of coal and gas. The influence of the near proximity of the cooking-apparatus was felt in the hot state of the viands. Instead of having to travel a long distance from a kitchen, either underground or on the highest story of the building, arriving half cold, as is too often the case at public dinners, they were brought direct from an adjoining apartment, and were served before they had commenced to cool. The cooking was in every way excellent, and left nothing to be desired; as, indeed, it should be when the heat is under absolute control, and there are no products of combustion to mingle with the delicate flavor of the comestibles. At the close of the dinner, the Lord Mayor—an authority every one with the close of the dinner, the Lord Mayor—an authority every one with the close of the dinner. This works out to 2d. per head, or 2d. per course, a truly insignificant amount. While the company charge 8d. per unit for current used for lighting, they charge only 4d. for that employed for cooking and motive power. Dr. Sylvanus Thomson, in reply to the toast of "Success to the Development of Electricity," recalled a former electric dinner given in 1749 by Benjamin Franklin on the banks of the Schuylkill. The turkey was killed by an electric shock, and cooked by a fire kindled by an electric spark, while various electric experiments seem to have served as entrées in an

Testing Old Masters with the Camera.—The propaganda of art exploration which Dr. Wallace Wood set on foot in his exceptionally brilliant analytic lectures at the old University in Washington square stopped just short of the actual reformation in the study of art demanded by ideal criticism. There has been an enormous and stultifying amount of cant and ignorance in the differentiations of the masters of art, even from those accepted as the ablest experts. Scarcely a year passes that does not bring forward some alleged Raphael or Rembrandt, which careful investigation invariably shows to be a brazen forgery. Even so accomplished a critic as Ruskin has proved himself inadequate to the task of distinguishing a Canaletto from his mechanical imitators, Belotto and Marieschi. It is not enough to possess the critical sense, to formulate adequate opinions upon the chefs does were of art and the characteristics of great artists. Take, for instance, the familiar catalogue of the old-time collection of old masters in the Louvre. Here there are fourteen pictures ascribed to Raphael. But four of these are genuine, and one, "La Belle Jardiniere," has been so retouched that, substantially, nothing remains but the composition. Expert exploration has revealed that no less than five of these alleged Raphaels are by Giulio Romano, while the others are to be ascribed to various pupils of the great Raphael. The result of such bungling connoisseurship is the formation of a false impression of the artist. The would-be representation of "the school of Raphael" crystallizes into a few almost abortive types of the artist, expressed in two fairly rep-

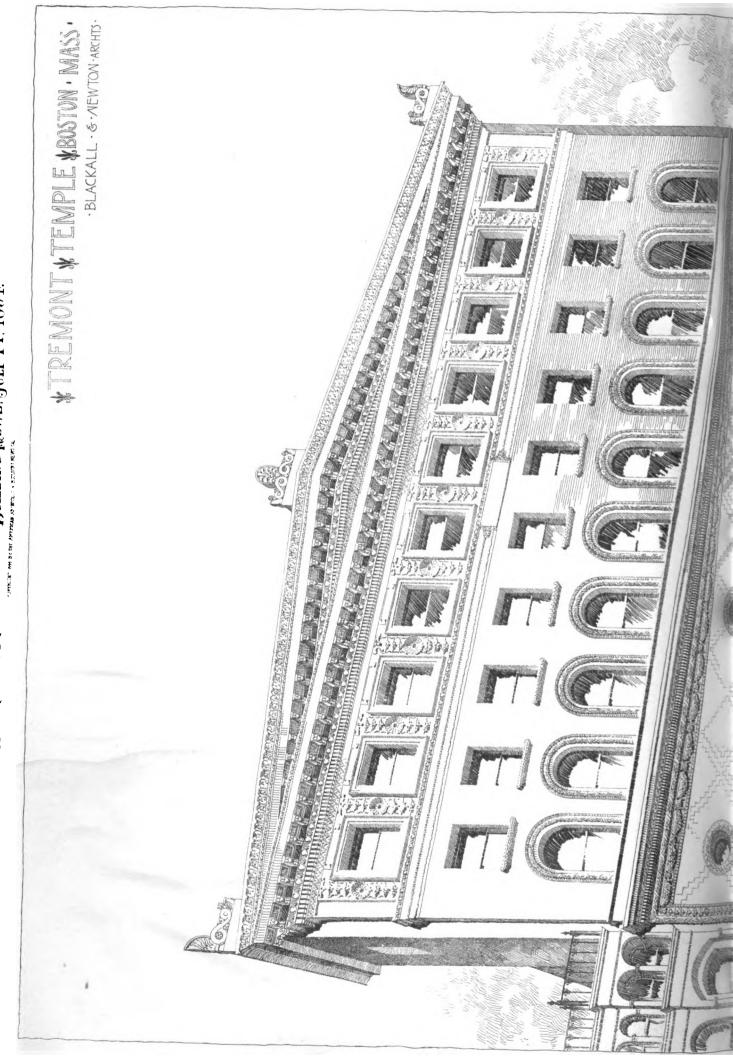
resentative pictures and two others, products of his boyhood years. resentative pictures and two others, products of his boyhood years. It has been reserved for the art of photography, guided by the hand and eye of a skilled scientist, Dr. Morelli, to tear down the factitious scaffolding that has for years obscured the truthful records of the so-called masterpieces of renowned old artists. The closing years of this nineteenth century will, it may be unhesitatingly ventured, witness such an upheaval in the false traditions existing as to the old masters as will mark a new departure and a new era in the study of art. — New York Mail and Express.

Sewage Disposal by Irrigation and by Chemical Treatment.—Col. George E. Waring, Jr., recently wrote as follows to the New York Evening Post: "There are two instances of sewage disposal in Ohio which are instructive. At Canton an elaborate chemical plant was constructed at a cost of over \$26,000, not including the cost of the land, and about \$3,000 was paid for operation last year. The daily flow of sewage is about 880,000 gallons. At Oberlin twenty acres of land was bought for \$1,500. Only four and three-quarters acres of this are used for irrigation. The cost of draining and grading was \$410. The flow averages about 30,000 gallons per day. No outlay is required for operation save for the regulation of the flow to alternate irrigation areas. Mr. W. B. Gerrish, the city engineer of Oberlin, has recently published an account of the arrangement of this work in which he says: 'Any one wishing to walk for recreation will find it an agreeable place to visit.' He publishes a series of analyses giving the composition of the original sewage and of the effluent of the underdrains by which the purified sewage is carried away; also the corresponding analysis of the sewage and effluent at Canton. These show that the chemical process removes 42.2 per cent of the sum of the ammonias, 50 per cent of the albuminoid ammonia and 65 per cent of the organic matter, and that the irrigation process removes 97.1 per pent of the sum of ammonias, 98 per cent of the albuminoid ammonia, and

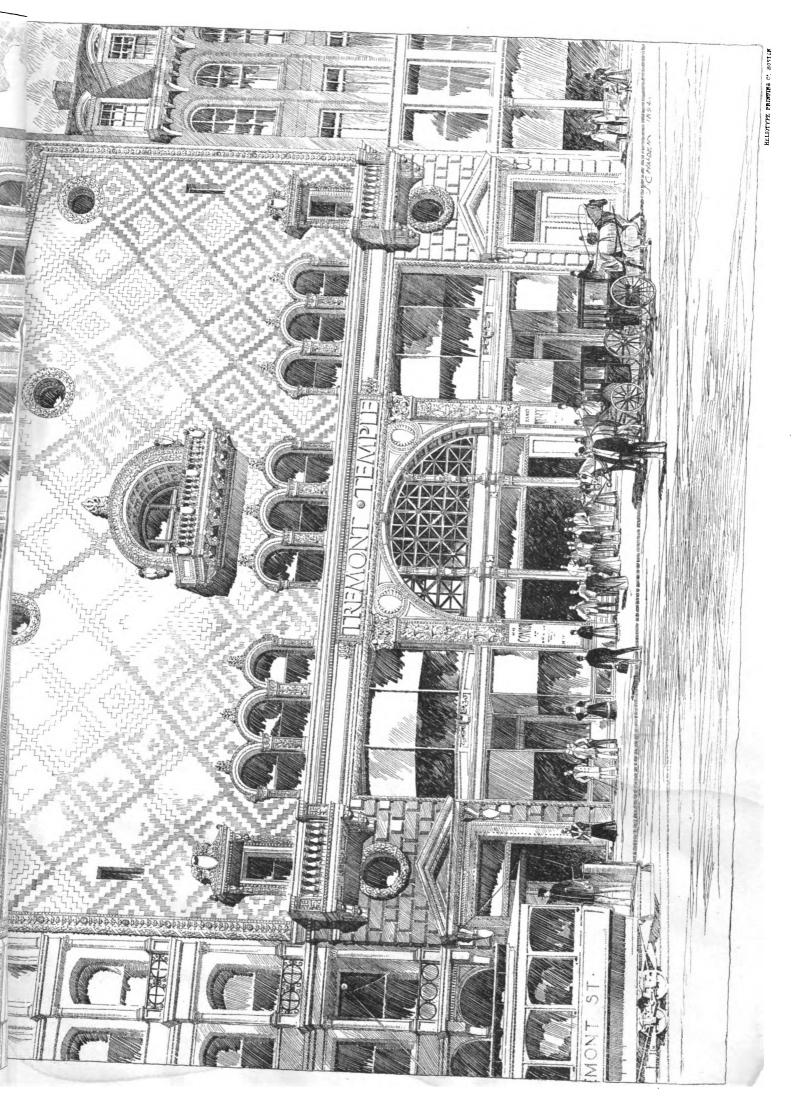
Exhibition of the Vienna Fire-department. — In honor of the English Fire Brigade officers now visiting Vienna, their colleagues in that city, our correspondent says, arranged recently a very interesting performance. An imaginary fire was signalled to the central station, and all the engines, ladders and men were almost immediately on their way to the great depot on the Hof, which was supposed to be on fire. All the windows were opened, and while the building was flooded with water, the distressed lodgers appeared at the windows calling for help. They were firemen. Some were in women's night-dresses, with dolls in their arms to show how women are saved. Some jumped into outspread sailcloths, some slipped down long sack arrangements reaching from the highest stories to the ground. Then invalids were saved by firemen, who climbed up rope ladders and got into the burning rooms with masks to save them from the smoke. When everybody had been "saved" the Englishmen applauded heartily, and the officers shook hands with many of the firemen who had distinguished themselves. The English deputation afterwards climbed St. Stephen's Tower to see the system of watching for and signalling fires. The Englishmen are regarded as the guests of the Vienna Fire Brigade, and are made much of and taken to see all the sights of Vienna. — London Daily News.

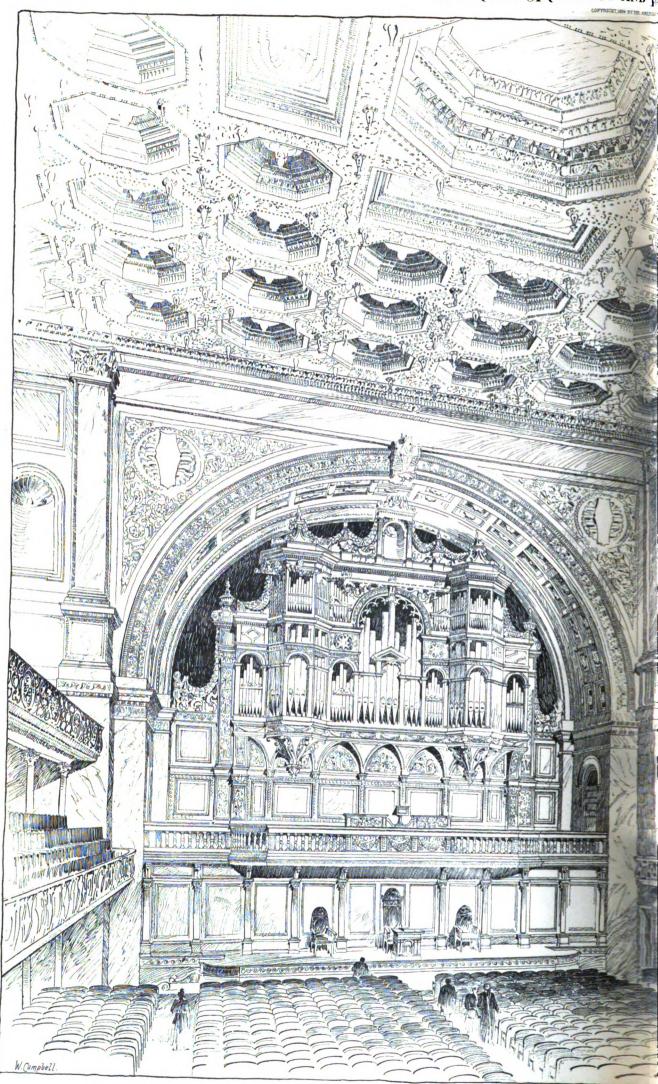
GLASS-COLORING IN GERMANY.—The beautiful coloring of certain varieties of glass now produced in Germany, and which is said to far excel some of the most noted French specimens, is an art practised, by the glass-blower at the furnace, by means of an apparatus consisting of a sheet-iron cylinder, twenty inches long and eight inches diameter, standing vertically, and having a similar cylinder rivetted across the top. Kuhlow's German Trade Review says that in the lower cylinder is an opening into which an iron ladle can pass, and the horizontal cylinder is provided with doors at either end, the one nearest the operator being so arranged that the blow-pipes can be supported when the door is closed in a horizontal split running to its middle, the object to be treated being held inside. While the glass-blower is reheating his work for the last time in the furnace, an attendant takes the long-handled iron ladle, which has been heated red hot, shakes into it about a spoonful of a specially prepared chemical mixture, and places the bowl of the ladle quickly in the opening provided for it in the vertical cylinder. The mixture immediately gives off vapor, which rises to the horizontal cylinders, where, meanwhile, the blower has placed his work, supported by the blow-pipe and heated to an even red, turning it rapidly in the vapor. In a short time the object is covered with a changeable lustre, is removed from the pipe and tempered like other ware in an ordinary oven, then cut, engraved, painted, or gilded as desired.

VIENNA'S UNDERGROUND ELECTRIC RAILROAD. — The Anglo-Austrian Bank and the firm of Siemen's & Halske have submitted to the London Board of Trade a detailed plan for a Vienna underground railway. It is intended to be an electric narrow-gauge railway, with double rails, and should begin at the Danube Canal, pass under the Central City to where it touches the western suburbs, continue under the Maria Hilferstrasse to the western terminus, and thence to the outskirt of the town to Schonbrun and Penzing. Between seventeen and eighteen minutes would be the time for getting from one end to the other. The railway would run directly under the pavement, without touching the foundations of the houses. A single carriage, to be started at short intervals, is meant to convey forty passengers in ordinary times, while in the morning and evening, and Sunday and fete days, two cars might be added. The Bank would begin to build the underground electric railway at seven points at once, and would complete it in a year from the day when the concession is granted. The Viennese, who have no means of communication in the central part of the city, wish this undertaking every success. — Cincinnati Commercial Gazette. the city, wish this undertaking every success. - Gazette.



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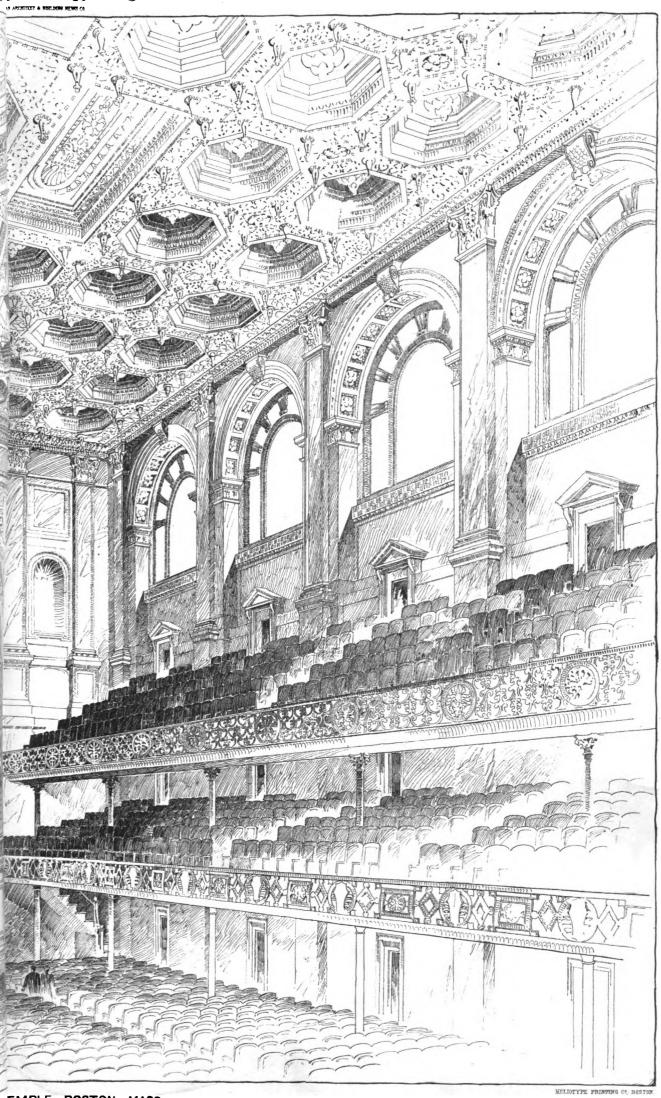




INTERIOR OF TREMONT

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EMPLE, BOSTON, MASS.

TON, Architects.

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JULY 21, 1894.



EGYPTIAN ()BELISKS. BOOKS AND PAPERS. ILLUSTRATIONS:

USTRATIONS:—
The Hooper Fountain, New York, N. Y.—The San Francisco Polyclinic, San Francisco, Cal.—Colonial Architecture of the Genesee Valley: Mantels in the Culver Homestead, Brighton, N. Y.—Colonial Architecture of the Genesee Valley: Details of the Tillman House, Geneva, N. Y.—House at Bensonhurst, N. Y.—Central Fire-station, Somerville, Mass.—Colonial Architecture of the Genesee Valley: The Folger House, Geneva, N. Y.—Colonial Architecture of the Genesee Valley: The Holland Purchase Land Office, Batavia, N. Y.

Additional: The German Village, Midway Plaisance, World's Columbian Exhibition, Chicago, Ill.—School Board Offices, Reading, Eng.—House at Wrexham, Eng.—Ballard, Coombe Warren, Surrey, Eng.

UNICATIONS: EXHIBITIONS NOTES AND CLIPPINGS.

Nour issue for July 7, last, we published the text of the bill introduced by Mr. McKaig, of Maryland, providing measures for the procuring of designs for Government buildings in substitution for those stated in the Tarsney Bill, which Secretary Carlisle had found, in a measure, unsatisfactory. We made no comment on this bill at the time, partly because it reached us as we were going to press, and partly because the provisions of the bill were too good to be true, and it seemed useless to waste applause on a bill which was so likely to be modified out of recognition when it should be discussed in the House. This apprehension, while it has not been wholly dissipated, has yet been modified by certain facts that we have since learned, and we feel now fairly satisfied that the bill will become a law during the sitting of the present Congress, and that its provisions will not be materially The discussion over the Buffalo Post-office building modified. was of such a nature that it was a delicate matter for the American Institute of Architects to devise a method of procedure which was not likely to provoke antagonism, and yet it was felt that the time was fully ripe, that Mr. Carlisle was really desirous that the methods of procuring designs for Government buildings should be reformed on some practicable basis, and that there really were administrative difficulties in the way of enforcing the Tarsney Bill. It finally seemed best that official action on the part of the American Institute of Architects should give place to associated individual action on the part of the profession at large. Accordingly, a meeting was held in New York, where the matter was discussed in all its aspects, and it was agreed that several members should attempt to draft a satisfactory bill. This was done, and at a subsequent meeting it was found that the bill drawn by Mr. Post practically satisfied every one. Later, a representative body of architects, some thirty or more, including both members of the Institute as well as non-members, proceeded to Washington under the chairmanship of Mr. Hunt, and there consulted with members of the Committee on Public Buildings and Grounds, members of Congress and other officials, discussed and altered the proposed bill until it reached the form in which it was introduced by Mr. McKaig. It is a presage of a successful issue that the architects found every one they consulted with fully alive to the importance of the subject, earnest in the intention to do the best practicable

thing, and ready to believe that the men before them were competent advisers. It is still more auspicious that the modifications which the politicians suggested were all in the direction of making the provisions of the bill more satisfactory from the professional standpoint, simplifying the method, and eliminating further the few possibilities it contained by which it could be made a political machine for the distribution of patronage. Thanks to this sensible attitude on the part of the members of the Committee on Public Buildings and Grounds, the bill is a stronger and more desirable one than that prepared by Mr. Post, which was held to satisfy all reasonable expectations. With the members of the important committee whom it most concerns fully in favor of it, with the support that it seems to be assured of from members on the floor of the House, and with Mr. Carlisle, as we believe, ready to favor a good bill, we feel there will be no difficulty in displacing with it the less satisfactory bill which Assistant-Secretary Curtis prepared at Mr. Carlisle's request. This done, we believe it will not be over-difficult to overcome the opposition which any such bill would excite in the office of the Supervising Architect and from any contractors' rings that may have an interest in securing the continuance of present methods.

MONGST the best features of the bill is the provision 1 which debars from entering a competition for Government work any architect who has not practised for at least ten years as architect-in-chief, and can, in consequence, cite evidence of his constructive and administrative capacity; as to artistic capacity, the possession of that quality goes without saying, as it is not supposable that the appointive commission, in whom the bill vests the real initiative and responsibility, would ever think of inviting any architect to compete for Government work who was not acknowledged to have this qualification. This single provision, more than any other, will, if the bill become a law, do as much for the profession, and for the architecture of the country, as any that could be devised, since it will establish a means of making an open distinction between the real leaders of the profession and the rank and file, and will give to those who are in the ranks merely because of present youth and inexperience a reason for greater exertion, in the hope of attaining, finally, the distinction of having been entrusted with Government work a distinction which, at present, few true architects crave. Another good feature is that while the bill preserves to the successful competitor all the rights and duties of the architect in private practice, at the established full rate of compensation, it does not waste public money by giving over-great compensation to the unsuccessful competitors, and so tends to magnify the honor which success brings to the winner, and in a manner testifies to the willingness on the part of the profession to make sacrifices for the ultimate good of the progress of art in this country. In like way, the very modest per diem compensation provided for the members of the Commission makes certain that the men who will be found willing to undertake the delicate and time-consuming duties of the position will accept the trust, not for the sake of the money they can make out of it, but because of a generous interest in their art and in the economical and artistic execution of Government building. The economical feature of these two provisions, we believe, will have a real effect in facilitating the passage of the bill.

T CURIOUS complication has arisen in regard to the competitive plans for the New York City-hall. are stored in a room in the Stewart Building, on Chambers Street, and a watchman has been employed to keep guard over them. A question came up lately about the payment of the rent for the storage-room, and the wages of the watchman, and Comptroller Fitch, on examining the subject, concluded that the law which repealed the statute allowing the use of the City-hall Park for the new City-hall "closed the incident," as the diplomatists say, and that thenceforth no authority existed for hiring rooms in which to keep plans for carrying out schemes in contravention of the new law, or for paying watchmen to guard such plans, and that he was not warranted in approving bills incurred for such purposes subsequent to the enactment of the statute. Probably this only means: that the people who have furnished rooms and service will have to apply to the Legislature next winter for a special appropriation to pay them, but it is rather to be regretted that an oversight should have caused them all that trouble.

IN the course of the tariff discussion in the Senate, the muchvexed question of imposing a duty on foreign pictures and statuary came up, and brought on an interesting discussion. Senator Vest, who has a mind of his own, and has always been the firm friend of cultivation and intelligence, assured the Senate that, as long as he remained in it, he should always vote to encourage everything that lifted and elevated the people. In his opinion, "A people who cannot admire art, who eschew it because it is unnecessary, will soon degenerate into fit subjects of despotism;" and he thought that "When a great pointing comes to a free people it angels to there of a great painting comes to a free people, it speaks to them oftentimes with a voice which oratory cannot rival. It teaches them a great moral lesson. It encourages them to heroic endeavor," and so on. Mr. Vest's experience of imported paintings appears to have been an unusually happy one, and the doctrine that the rejection of art prepares a community for despotism certainly receives very little support from history; but Senator Vest and his associates are quite right in thinking that the United States, if it is to have any art, wants to have it good, and that the way to have it good is to give every possible opportunity for those who produce it to study the work of other people.

CHARLES NORMAND, to whose quiet investigations the artistic world owes a great deal of interesting artistic history, has been studying the unpublished journal of Vaudoyer, Member of the Council for Civil Buildings, and of the Institute of France, during the First Empire, and has extracted some curious information in regard to Bonaparte's connection with the fine-arts, particularly that of architecture. According to La Semaine des Constructeurs, which describes the manner in which this interesting manuscript came into the hands of M. Normand, it seems that Bonaparte at first showed all the indifference, or even hostility, to the fine-arts that might have been expected from a man born in a savage island, and trained in a military school. "The sovereign," Vaudoyer writes, "does not like architecture; his ministers, in consequence, hold in aversion everything connected with architects; and, to flatter their prince, say so openly." In a report of the minister of finance to the Emperor, dated 30 Pluviôse, in the year XIII, which Vaudoyer quotes, it is written: "The greatness of sovereigns lies not in the vast extent of their States, nor in the fortresses which tempt, rather than check, the efforts of the enemy, nor in the monuments, which the vanity of one generation raises, and the indifference of another generation allows to fall; it lies in the institutions which strengthen souls, preserve morality and extend intelligence." After the same spirit, Napoleon, ity and extend interingence. After the same spirit, Napoleon, in the decree of 22 Fructidor, year XII, which established grand prizes, to be given every ten years, by the hands of the Emperor himself, to "all those who had been useful and great," expressly excluded architects, the decree, in specifying the kinds of work in which "greatness and usefulness" could be shown, saying, in so many words, "except in architecture." A year or two later, however, a change come over the con-queror's sentiments. On the 17 Brumaire, in the year XIV, a deputation from the Senate, which had been dispatched to congratulate the Emperor on his victories in Germany, had an interview with him at Lenz. Monge, who was the orator of the occasion, delivered a formal discourse, in which he said, "Sire, it will require many monuments to render credible the history of the prodigies that you accomplish."

THIS struck Napoleon as a new idea. Vain above all things, he soon came to the conclusion that if monuments were going to add to his fame, it was desirable to have plenty of them. The very next year, Vaudoyer observes in his journal that "the Emperor has willed that his capital, now become the first capital of the universe, should accord in its aspect with its glorious destination. At one extremity of Paris, a bridge has just been finished, known as the Bridge of Austerlitz; another has been commenced at the other end, which is to be called the Bridge of Jena, thus the Seine, loaded,

so to speak, with the trophies of our warriors, will attest to future races that, in this century of marvels, the hand which gained a victory, and overthrew a throne, at the same time raised a monument of public utility; and that the author of so many exploits made them serve only for the prosperity of the people whose glory he immortalized.' condescending, however, to patronize the fine-arts for his own benefit, Bonaparte chose his own manner of showing his appreciation. During the Consulate, the municipality of Paris had voted to erect a monument, in the form of a triumphal portico, "to transmit to posterity the gratitude of the city toward Bonaparte, the First Consul." Nothing more was done about the matter then, but, in 1806, the proposition was revived, but with the modification that the monument should consist of a column, to be placed in a square, which should thenceforth be called the "Place Napoleon-le-Grand." A few months later, however, the vote was changed, and a triumphal arch was decided upon, instead of the column, and it was voted to erect it on the site of the Bastille. Bonaparte, however, had other views. He was just laving out his great street from the Tuileries to the Champs-Elysées, and the intersection of this with three other streets formed a point which he thought it desirable to ornament. Accordingly, he directed that the arch should be built there, and informed the municipal authorities that he would furnish the plans himself. this view, he summoned four architects, the Citizens Bellard, Percier, Demantord and Quatremère, and gave them ten days within which to produce drawings and specifications for what is now the Arc de l'Étoile. In the matter of plans, above all things, "the more haste, the worse speed;" and the completion of the drawings was the signal for an interminable series of discussions and alterations. After the foundations were in, several commissions were appointed, to determine whether the arch should have columns, whether there should be one opening or three, and so on. New designs were made, by MM. Chalgrin and Raymond, and were submitted to a new commission, which included Vaudoyer, Allevier, Peyre, Durand and While the discussion was going on over them, Napoleon arrived. Hearing that there was a difference of opinion as to whether there should be columns, he said he would not have any; in regard to the number of openings, he said he would have only one; and he directed that the work should proceed at once. Meanwhile, the Institute of France had been holding a competition for designs for the Temple of Glory, now converted into the Madeleine, and had selected the plan of Doumont. The Emperor interested himself in the matter, examined the designs, and ordered that Doumont's plan should be abandoned, that he should be paid an indemnity of twelve thousand francs, and that Vignon's design, which had been placed second, should be carried out instead.

THE death of Sir Austin Henry Layard ought not to pass without notice from the lovers of architecture and archæology. It is many years since the publication of "Nineveh and its Remains," or "Layard's Nineveh," as it was universally called, aroused a fever of excitement in the learned world, but its author has been remembered ever since, and will be remembered for a long time to come, not only as a very successful explorer, but as one of the most enthusiastic and interesting writers who ever treated of archæological matters.

ITHE long discussion about the World's Fair Medal has been ended by the adoption, by Secretary Carlisle, of a bicephalous design, Mr. St. Gaudens's model, representing the landing of Columbus, having been accepted for one side, while the other side, for which he designed his celebrated nude figure, is to be occupied by a composition devised by Mr. Charles E. Barber, the designer for the Philadelphia Mint, representing a shield with inscriptions, surmounted by a globe, which has female figures for supporters, while flaming torches, "representing light, or intelligence," cast their lustre from either side upon the shield. In order to connect the composition with that of Mr. St. Gaudens, on the other side, and give it, as it were, a Columbian flavor, a little caravel is seen under the shield, which partly covers it. To the architect, this de scription conveys an idea of a frightful want of scale among the different portions of the design; but the designers of medals are apparently not subject to ordinary rules in this respect.



TOWERS AND TURRETS. - II.

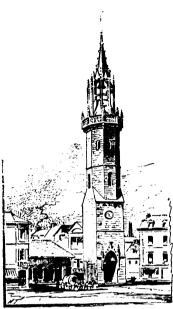


Fig. 5. Belfry of Evreux.

W E have a number of bel-fries in France which do not belong to the same class as those of the North, for example those at Auxerre, Beaune, Orléans and Evreux (Fig. 5); the last is the most elegant and finished. The belfry of Compiègne serves, in a way, as a connecting link between the two types. At the beginning of this century, Nantes still possessed a belfry, the celebrated Tour du Bouffay, the architecture of which was less curious than the lead crowning with genii sounding a trumpet.

Sometimes the belfry is erected in connection with the town-hall, as at Arras, Douai, Saint - Quentin and Compiègne, in which case the dimensions are considerable; oftener it is joined to another communal structure, the great

Halle, as, for example, at Bruges and Ypres; more frequently still, it is isolated or towers above a mass of buildings, and then, especially, does it become imposing and monumental. There are examples of belfries built over a street, or rising in the centre of a public square, with a broad vaulted passage in the ground-story. Certain cities utilized towers of defense forming city gates in the fortification walls; others, through properly executed papers, obtained from the clergy the right to use the church towers, and even those pertaining to monastic establishments (Saint-Salvi of Albi, Beaulieu-sur-Dordogue), when they were built on the nave.

Notwithstanding its relationship to the towers of defense

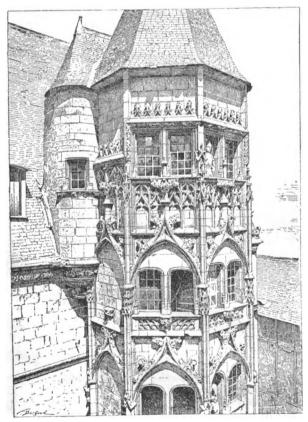


Fig. 6. Turret of the Old Hôtel de Ville, Bourges.

and the bell-towers, the belfry has dispositions peculiar to itself, the most prominent features of which are the turrets—either corbelling or rising from the ground—at the angles of

¹ From the French of Anthyme Saint-Paul and H. Nodet, in Planat's Encyclopédie de l'Architecture et de la Construction. Continued from No. 968, page 16.

the square and the timber roofs. Stone crownings are more rare; the crowning of the belfry of Brussels, which is exactly like a church spire, forms an exception. The battlements and other military equipments are merely ornamental, since the belfries, with their broad bays, could by no means withstand an attack. The belfry of Bruges is the king of structures of the kind, not only on account of its height (more than 107 metres), but also because of its happy dispositions. At a certain elevation, four lofty turrets stand out completely from the mass, discreetly covering the oblique walls of a lofty octagonal story, with ample openings.

The characteristics noted above pertain especially to the belfries of the Low Countries and northern France. In other regions they do not follow any system exactly: here, we find them almost bell-towers and there, towers of defense, which the crowning with its bell-chamber alone differentiates from a donion.

There are belfries dating back no farther than the seventeenth and eighteenth centuries and some even belong to the present century; they reproduce quite accurately the dispositions of the modern bell-towers of classic style.

Turrets. — As we said at the outset with reference to religious edifices, so for civil edifices the tower was an object

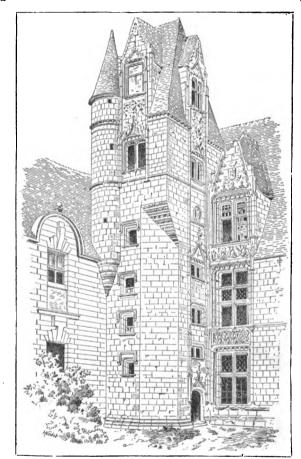


Fig. 7. Staircase of the Château de Haute-Goulaine (Loire-Inférieure).

of luxury or necessity; in fact, from the thirteenth century we find staircases housed in little towers or turrets projecting on the court façades; and toward the end of the fourteenth century, these staircase turrets assumed great importance: they did not interfere with the disposition of the apartments and the staircases occupied the least possible space. They were placed more or less in projection on the exterior, and more decorative enrichment was concentrated on them than on the rest of the façade: such are the celebrated staircases of the old hôtel de ville at Bourges (Fig. 6), that of Blois, etc. It may be said that a vast number of castles and manors still preserve remarkable staircase towers, not only in France, but also in England and Germany; nearly always the grand staircase terminated at the last square story; from this point a secondary flight, in a corbelling turret, led to the roof story and to a room with a fireplace situated above the grand staircase itself. This disposition, of which we offer an example, taken haphazard, in Figure 7, gave a very picturesque character to the façades.

Sometimes the turret is surmounted by a small room or the apse of a chapel in the first story, and forms a porch on the

ground-floor: at the Hôtel de la Trémoïlle (Fig. 8), at Paris, now demolished, and at the Château de Nantouillet, this general disposition had been adopted with a great deal of art.

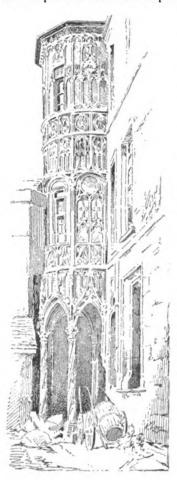


Fig. 8. From the Hôtel de la Trémoïlle, Paris.

The term "turret" is especially applied to a small corbelling tower. It is a mediæval invention, and particularly Germanic and Anglo-Norman. It was employed at first, from the end of the eleventh century, to adorn the donjons of castles and the gables of churches, and was doubtless in these cases a survival of the ancient acroteria; the introduction of turrets became common in the churches along the Rhine, in the English donions of the twelfth century and in the churches of Poitou; in these last, it was constructed only at a certain height, and supported by groups of columns which gradually led to corbelling.

In the thirteenth century, turrets passed into the civil architecture of cities, palaces and castles; they came into more and more general use and survived Gothic architecture. In military monuments, they sometimes occupied the position of flanking towers, but more frequently they simply served as buttresses or as bases for watch-towers.

Not only did the turret enclose a small staircase, an annex to the staircase of

honor, but in the dwellings of the bourgeois it contained the only staircase by which communication was established between

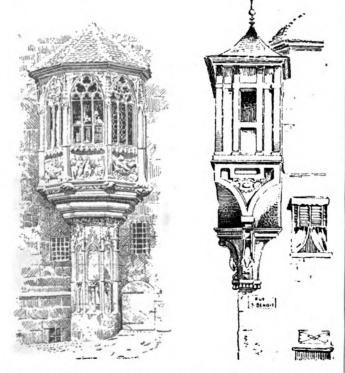


Fig. 9. From a Fourteenth-Century House, Fig. 10. From a House in the Rue Nuremberg. Saint-Benôit, Paris.

the stories; it began on the façade at the height of a semirevolution a little above the lintel of the entrance door; owing to this contrivance, circulation in the street was unimpeded and in the interior of the dwelling there was the very appreciable gain of half the space occupied by the staircase. We find in France, notably at Villefranche-de-Rouergue, a number of old houses in which this disposition is still preserved intact.

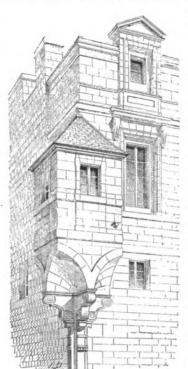


Fig. 11. From the Hôtel Lamoignon, Rue Pavée, Paris,

The turret was, therefore, made to do good service in cases where the space was limited, and the architect was not obliged to take into account highway regulations, but merely the laws of good construction; from the fourteenth century, it contributed to the comfort of the dwelling rooms by extending the view while enabling the inmates to watch the arrivals; often it proudly flanked both sides of the entrance; it was not until a very late date that it was abandoned.

The turret was, moreover, the only means of obtaining side views; it appears, from early times, in the English manor, where, in the sixteenth century, it comes nearer to the ground and is so enlarged as to form an important addition to the adjoining room; it is in several stories and

rises to the top of the main roof. In Germany, Austria, and the Low Countries the same desire to enlarge one's horizon induced every bourgeois to adorn his dwelling with a polygonal projection more or less open on the street; this row of turrets, generally disengaged on only a half of their diameter, is not one of the least curiosities of Innspruck. In France their use was less general and they seem never to have been anything but an appendage of the dwellings of the nobility; few are found in the South; but in Spain the *mirador* really plays the rôle of the turret in Northern countries.

The corbellings designed to support towers furnished an opportunity for technical or decorative combinations as in-

genious as they were varied, even under Louis XIII (at the Bank in the Quartier du Marais, Paris; at the Capitole of Toulouse, etc.).

Thus, the turret rests on a corbelling or culot, on an engaged column or on a buttress (Fig. 9), on projecting consoles (Figs. 10, 11) or on an overhanging pendentive (Fig. 12). In the fourteenth and fifteenth centuries, corbellings formed of numerous superimposed mouldings were very popular. The corvery popular. bellings started lower and lower down in proportion to the projection of the turret, not only in order to enlarge the support, but also to balance the weight of the angle masonry. In order to facilitate the solution of the important question of



Fig. 12. From the Hôtel Pincé, Angers.

equilibrium, the front walls of the turrets were constructed of thin material and, if the *culot* was circular, the turret was often on a polygonal plan, the angles of which served to

counterbalance the lightness of the ensemble; it is rare, however, to see turrets disengaged on three-quarters of their circumference: generally the ratio is not greater than something over a half.

As a remarkable example of construction the turret of the Hôtel Marisy at Troyes (Fig. 13) may be cited. Having become masters in the art of drawing, the architects of the seventeenth century often placed their turrets on pendentives; the one still existing at the Bank of France has often been mentioned.

We seem, to-day, to be appreciating anew the advantages of these retreats from which we can see without being seen and, in returning to the turret of our ancestors, to make it acceptable, we have adopted an English term "bow-window," designating a simple glazed balcony, devoid of grace, but which may be considered as a step toward genuine and elegant ANTHYME SAINT-PAUL AND H. NODET. turrets.

THE ESSENTIAL CONDITIONS OF SAFETY IN THEATRES.1—IV.

FIRE-ALARMS.

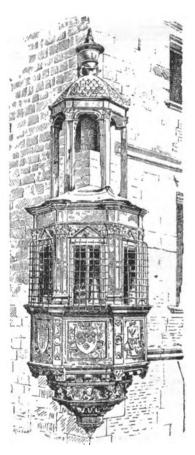


Fig. 13. From the Hôtel Marisy, Troyes (1531).

KVERY theatre must be fitted up with a complete fire alarm system. This should include telephonic and telegraphic connection with the nearest fireengine station, and also with the headquarters of the firedepartment, so that in case of an out-break of fire, the firemen may be immediately notified. In large theatres it is desirable to have other means to indicate quickly the presence of flames. Thermostats, or heat-indi-cators, may be suitably placed and distributed throughout the house, which indicate in the manager's office the presence of undue heat or fire at any point. The automatic-sprinkler system should always be fittedup with a fire-alarm, which rings a gong on the stage or in the office, and another gong on the outside of the building, as soon as any sprinkler has been put in operation. There should be a fire-alarm telegraph, connecting the manager's office with the pump or boiler-room, so that the engineer can be immediately notified, in case of fire, to look after the boilers and the firepump. In some recent European theatres all the doors In some recent Euleading to the stage, and the fire-doors in the proscenium-

wall are fitted with a system of alarms, indicating in the office when any of the doors is not closed. Such alarms must, of course, be switched off during the rehearsals and performances, but at all other hours they indicate whether the stage is completely shut off from the rest of the building.

QUESTIONS OF MANAGEMENT.

There are many points in the management of a theatre which tend, directly or indirectly, to increase the safety of such buildings from the danger of fire, and which likewise affect the safety of the theatre-going public. To some of these I shall make brief refertheatre-going public.

Strict discipline and order should prevail on the stage. The theatre-staff should be called together regularly for fire-drills, and for instruction in the use of fire-extinguishing and life-saving appliances. Each employé should be entrusted to perform a particular duty in case of a fire.

There should be at all times a theatre-watchman, and at night, in particular, a special night-watchman. His duty should consist in making frequent trips, at regular intervals, to all parts of the building, and it is advisable to have his faithfulness controlled, and his inspections recorded, by an electric watchman's-clock.

No open lights or open fires should be allowed in any room near the stage or on the latter. The rooms for the storage of theatrical costumes should, at night, be entered only with safety lanterns. The use of candles or oil-lamps in the dressing-rooms, the use of wax or parlor-matches, and likewise the smoking of cigars, cigarwax or parior-matches, and likewise the smoking of cigars, cigarettes or pipes should be prohibited. Smoking on the stage, if required in the scenes of a performance, should be restricted as much as possible. Candelabras with candles and oil-lamps, if used in the play, should be handled with extreme care.

The practice of a sudden and unannounced darkening of the auditorium during changes in stage entring with raised courtain is

ditorium, during changes in stage-setting with raised curtain, is

dangerous and may precipitate a panic.

Special care should be observed, and strict regulations issued, regarding the use of fire-arms, the burning of fire-works, the use of colored and calcium lights, so frequently introduced in spectacular plays, the dancing with lighted torches, or even the representation of actual fire-scenes on the stage. The wads for rifle or pistol of actual fire-scenes on the stage. The wads for rifle or pishots should be of calf's hair or asbestos wool, and not of paper.

Trained firemen should be in attendance on the stage during very performance. The firemen should be in charge of the every performance. appliances for the extinction of fires, and should satisfy themselves by personal inspection shortly before each performance, that they are in good working-order and ready for instant use. The fire stand-pipes and valves should not be obstructed. There should be a penalty enforced for using fire-pails for other purposes. During performances the fire-pump should be constantly kept under the the steam pressure required to operate the same.

The safety-appliances should be in charge of a special trusted inspector. He should, if practicable, have on the stage an office or watch-tower, from which, like the operator in a central-switch railroadtower, he can operate the fireproof curtain, the stage-roof ventilators, the registers of the ventilators in the auditorium ceiling, the perforated-pipe system forming a water-curtain at the proscenium-opening, and the fire-alarm apparatus. He should also have telephone communication with the theatre-manager's office, with the engine or pump room and with the nearest fire-department station.

The fireproof treatment and impregnation of light dresses and gauze costumes should be insisted upon, particularly for the ballet-dancers, and the treatment should be renewed after each washing.

Besides the automatic alarms on the stage, in the manager's-room and in the engine-room, a theatre should be connected by telephone and by fire-degraph with the nearest fire-station and with the head-quarters of the fire-department.

The constant use of all safety-appliances should be insisted upon. At every performance, the fire-curtain should be lowered to insure

Likewise should all theatre-exits be thrown open and used nightly, so as to have the public become familiar with them. The oil-lamps in corridors and staircases should be lighted every night, and not extinguished until the entire audience has left the theatre. All exit-doors should be plainly marked in large and distinctly legible letters. It is a good plan to mark all other doors, which do not lead to exits, either by the words "no exit," or else to designate them so that they may be easily recognized, as, for instance, "toilet," "buffet," "cloak-room," office," "ladies' retiring-room," etc.

The exits and staircases should be plainly shown on clearly printed plans of the theatre, hung up in conspicuous places in the foyers or corridors. The theatre plans and the exits should be printed on every theatre programme, and in a way so as to be clearly legible.

The number of persons admitted to a theatre should be strictly limited by law according to its seating-capacity, and it is better still to license each division of the auditorium for a fixed number

of persons.

No standing room should be permitted, nor should camp-stools be used in the aisles. The open courts at the sides of the theatre should not be used for temporary storage of theatre trunks or stage scenery, but they, as well as all passages, should be kept clear from all encumbrances.

The utmost cleanliness should be maintained throughout a theatre, not only in the auditorium, but also on the stage, in the dressing rooms, the toilet-rooms and the places under the stage. The daily removal of all dirt, dry dust, sweepings, shavings, rubbish, oily rags, and other waste materials of all kinds must be performed with regularity. Pending removal, oily rags or cotton waste should be kept stored in metal boxes, closed by iron lids, and raised up from the floor on legs.

The theatre-director and stage-manager should at all times re-

member, that the safety of the audience is the chief consideration. To accomplish this, the strictest rules and regulations should be enforced, in order, first, to prevent the outbreak of a fire; second, to localize and confine a fire when it does break out; third, to protect the audience against fire and panic; fourth, to secure safe egress in case of fire or panic to the audience and to the theatre employés and actors, and fifth, to extinguish a fire in its incipiency before it has a chance to spread and carry destruction.

The law should require every theatre-manager to have in the office of the theatre a complaint-book, which should be accessible to the public and to the press. In this book every person observing some real defect should call attention to the same, so that the complaint may be brought to the notice of the authorities for investigation and remedy.

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¹ An Essay on Modern Theatre Planning, Construction, Equipment and Management. By Wm. Paul Gerhard, C. E., Consulting Engineer for Sanitary Works. Continued from No. 968, page 17.

No interior alterations, affecting either the plan, or the arrangement and construction should be made in any existing theatre without the approval of the building or fire departments.

PERIODICAL INSPECTION.

A few words, in conclusion, about theatre inspections. vigilance forms the only assurance of continued safety in a theatre. There should be, to begin with, examinations and visits to all parts there should be general and frequent examinations, either by the architect who designed the structure, and who is more than any one else familiar with all its features, or by a specially appointed committee of experts. Such a committee would be suitably composed of the following members, viz.: the manager, an architect, a builder, an underwriter, or a member of the fire-department, an hydraulic-engineer and an expert electrical-engineer.

A periodical inspection in detail of all gas and water fittings, frequent tests of the gas pipes, of the fire-pump, of the automatic-sprinkler system, and of all other fire-appliances, of the electriclighting system, and of the fire-telegraph and fire-alarm systems, and of the various other electric equipments, of the fire-proof curtain, the stage-roof ventilators and the lightning-rod protection, these are all necessary to prevent a failure in the working of any of the safe-

guards in an emergency.

There should be, moreover, occasional official inspections by the authorities, the fire or the building department, preferably without a previous announcement. Repeated inspections of new theatre-buildings are necessary to prevent any transgressions of the theatre-fire-law by the theatre-manager, or the engineer in charge of the theatre, after the same has passed inspection and received the approval of the authorities. It also sometimes happens, that after the theatre license has once been obtained, internal changes in arrangement or equipment are made, which would be contrary to the rules, and which would have a tendency to reduce the safety of the building.

WM. PAUL GERHARD.



Brighton there is only one important house, the Culver homestead, now owned and occupied by Mr. Howard Smith.
It was originally a tavern, the first beyond the historic "Eagle"
tavern at Rochester, on the direct road from Niagara Falls to

Albanv.

This fact accounts for some peculiarities of its arrangement and construction, the second story of the main part being principally given over to one large room—the old ball-room, which extends the entire length of the front of the house, with nine windows, facing in three directions, and two fireplaces, one on each side of the entrance. The ceiling is high and domed, and the floor sets clear of the joists so as to make it springy for the dancers and to facilitate the execution of "pigeon-wings," which were a principal feature of many of the old-time dances.

Geneva being an old town and well to the occurred and the set of the occurred and the set of the occurred and the occurred and

Geneva, being an old town and well to the eastward, contains many interesting Colonial buildings. The oldest is the Tillman block on Exchange Street, and architecturally considered, it is perblock on Exchange Street, and architecturally considered, it is perhaps the best, following as it does the common New England type of the period in which it was built. Of quite a different character are the houses which line Main Street, the "Faubourg Saint-Germain" of the aristocratic little town. Here the Colonial style has undergone important modifications, in order better to meet unusual requirements. The street skirts the summit of a high bluff overlooking Seneca Lake, and from it the view is magnificent; and the houses are accordingly provided with ample verandas, not only in the first story but in the second also. It is interesting to compare the various solutions of the difficult in design, involved in such an arrangement. The most popular seems to have been some modifica-tion of the Classic portico with the second story balcony let in between the great columns, but in a few cases, two superimposed orders have been employed. The Folger house, built about 1825,—a front elevation of which is shown herewith,— is the best example of this class. By making the second-story piazza three spaces wide, above five spaces in the first, a fine pyramidal effect is obtained, not readily apparent from the drawing.

The Hobart College buildings are on Main Street at the summit

of the hill. The first one was built in 1821 and the second, identical in appearance, in 1837. Though aside from the subject of Colonial architecture, I cannot refrain from an admiring mention of the

Continued from No. 952, page 142.

beautiful English Gothic church built by Upjohn during our best Gothic period, and worthy to rank in the same high class as Grace

and Trinity of New York.

Batavia, though half as many miles to the west of the Genesee as Geneva is to the east of it, was settled at about the same time. In 1800 the village was surveyed for a town, and in 1802 it was



Block of Houses, Geneva, N. Y.

made the seat of government of the county, through the efforts of made the seat of government of the county, through the efforts of one Joseph Ellicott, a surveyor and agent of the Holland Land Company, and the principal pioneer of the region immediately west of the Genesee River. The old land-office and the first court-house and jail are still standing. The former is unoccupied and ruinous, but is soon to be put in good condition and converted into a sort of historical museum. The latter, Ellicott Hall, has suffered many alterations, having been used in turn as a court-house, land-office, a first interpretation office, a roller sketting right and a storehouse for some fire-insurance office, a roller-skating rink and a storehouse for second-hand furniture, which it remains. It was built in 1802 and was paid for in land, the builder receiving one acre for every day's labor. Immediately beside it, formerly stood a house to which Gen. Winfield Scott was taken, to recover from wounds received in the battles of Chippewa and Lundy's Lane, in the war of 1812; near by was a tavern, Keye's stand, which served as officers' head-

quarters throughout the same war.

The early history of the region round about Batavia is mainly the history of the Holland Purchase. The land bought from the Indians by Messrs. Phelps and Gorham, through their failure to carry out their part of the agreement, reverted to its original holder, the State of Massachusetts. The part lying west of the Genesee river was then bought by Robert Morris, who sold it in Genesee river was then bought by Robert Morris, who sold it in 1792-3 to an association of Dutch and American capitalists, called the Holland Land Company, he still retaining a part, under the title of the Morris Reserve. In 1797, the Company employed Joseph Ellicott to survey their purchase and to open offices for the sale of the land to settlers, who shortly came flocking from the east and south. As before stated, and as the name implies, the Holland Company was composed largely of Dutchmen, and there are one or two amusing incidents recorded in the history of the Purchase,



One of the Hobart College Buildings, Geneva, N. Y.

which are as delightfully characteristic of the race as those narrated in Dietrich Knickerbocker's immortal history. Here is one of them: In the first apportioning of the land, for some reason not readily apparent, four members of the Willink family were given their choice of 300,000 acres in any part of the Purchase. They thereupon located it in a square found in the south-east corner, which was absolutely the most undesirable portion of all, from an agricultural point-of-view, for no other reason than that it was nearest to Philadelphia!

The pioneer history of the Purchase is barren of romantic interest—of "hair-breadth scapes, and stirring accidents by flood and



field;" but there is at least one story, which, though lacking in blood-stirring and hair-raising elements, yet strangely affects the imagination and lingers long in the memory, like some minor air. It is still told to children around many firesides and is called the "Story of the Lost Boy."

Ellicott Hall, Batavia, N. Y.



The Cary House, Batavia, N. Y.

In 1806, one David Tolles, a farmer living near Batavia, sent his son to watch that no cattle strayed into a newly planted field, there being no roadside fences in those days. The lad discharged his duty faithfully: when the animals appeared, he followed them out into the woods, but he never came out again. The whole countryside was aroused and search parties organized, but the mystery



House at Canandaigua, N. Y.

of his disappearance was never solved. On the second day of the search some one discovered his tracks; on the third, they found where he had slept, and the bundle of fagots which had formed his pillow; on the fourth day, they came upon a little brook where he had washed some roots,—the water was yet riley with his presence,- but he had fled at their approach and further search proved

ence,—but he had fled at their approach and further search proved unavailing.

It is a sad little story, but the sequel is sadder still: From that time until the day of his death, the father of the Lost Boy became a wanderer in the vain search for his son. If a rumor reached him of a wild boy having been seen in Pennsylvania, or Ohio, or in places even more remote, he would set out on foot, only to be disappointed at his journey's end, or sent upon some equally fruitless quest. Against the plain and commonplace background of the times, the figure of this sad, mad, remorseful father looms large and



Le Roy House (rear), Le Roy, N. Y.

black. One cannot but picture him a very Lear of the wilderness, poor and alone, penetrating on foot the hungry fastnesses of regions little known, in search of the Lost Boy, who, if alive at all, was a boy no longer.

The village of Le Roy contains, at least, one house of more than common interest. This is the Le Roy mansion, at one time the residence of the family for which the place was named. It was built dence of the family for which the place was named. It was built sometime previous to 1812, and was originally a land-office of the Holland Company, of which Herman Le Roy was an agent. In 1821 it was remodelled and enlarged, and occupied by his three sons and a daughter, Catherine Bayard Le Roy; and here, in 1828, came the great Daniel Webster, courting her. They were married the following year, she being his second wife. Shortly after the wedding a grand reception was held at the old house. Webster seems to have been fond of the place and often visited it with his wife in after years.

CLAUDE FAYETTE BRAGDON.

SAFE LOADS FOR H-SHAPED CAST-IRON COLUMNS.

ALTHOUGH steel is being more largely used every season for the upright supports in buildings, it will probably never entirely supplant the cast-iron post, and, in fact, it is still a disputed question whether a steel post is better than one of cast-iron, for buildings of moderate height.

For skeleton construction, when the height of the building exceeds twice its width, it seems unquestionable that the riveted steel column, "breaking joint" in alternate stories, and with riveted connections with the beams and girders, is much the best; but for the larger proportion of the buildings in which iron posts are used, castiron possesses advantages which the writer believes are not exceeded by the riveted steel post. The most important of these advantages are:—low cost, quickness of production, and ease in making connections.

The principal disadvantage as found in practice, is the difficulty,

if not impossibility, of making rigid connections with the beams and girders. In buildings of not more than five or six stories, however, this is not of great importance.

Cast-iron is, of course, subject to flaws and the columns are liable to be cast of uneven thickness of metal, but by careful inspection, these defects can be discovered, and any columns containing them rejected.

For unprotected columns, cast-iron is unquestionably better than

For unprotected columns, cast-iron is unquestionably better than steel, as has been quite conclusively demonstrated by the experiments of Prof. Bauschinger, of Munich. Cast-iron, three-quarters of an inch or more in thickness, is also practically uninjured by rust, while it is claimed that wrought iron or steel may be almost destroyed by it.

Although cast-iron columns may be made in a great variety of shapes, the hollow cylindrical and rectangular columns have thus far been the principal shapes used, and for interior unprotected columns the cylindrical column probably meets the usual requirements better than any others. Every year, however, the requirements of better than any others. Every year, however, the requirements of building regulations are being made more strict, so that at the present time, it is required in most of our large cities, that all vertical supports in buildings over five stories in height shall be protected by fireproof material, and for such buildings, the writer would call attention to the H-shaped column, as offering the following advantages.

1. Being entirely open, with both the interior and exterior surfaces exposed, any inequalities in thickness can be readily discovered, and the thickness itself easily measured, thus obviating any necessity for boring, and rendering the inspection of the columns much less

2. The entire surface of the column can be protected by paint.

3. When built in brick walls, the masonry fills all voids, so that no open space is left, and if the column is placed as shown in Figure 1, only the edge of the column comes near the face of the wall.

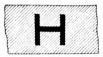


Fig. 1.

4. Lugs and brackets can be cast on such columns better than on circular columns, especially for wide and heavy girders.

5. The end connection of the columns do

not require projecting rings, or flanges, which are often objectionable in circular columns.

The cost of columns of this shape should not exceed that of circular columns of the same strength.

As to the strength of such columns, the only experimental data which we have on the subject is that obtained from the experiments of Mr. Eaton Hodgkinson, which give them about the same strength as cylindrical columns of the same diameter, when the length does not record thirty diameters and the highest strength as the same diameter.

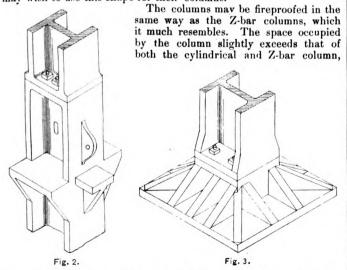
exceed thirty diameters and the thickness is not less than three-quarters of an inch. When surrounded by masonry they would probably be stronger than the cylindrical column. The following table has been calculated with the same stress per square inch of metal, as allowed for cylindrical columns, of a diameter equal to the least dimension of the H-shaped column, using a

factor-of-safety of six.

SAFE-LOADS IN TONS OF 2,000 POUNDS FOR H-SHAPED CAST-IRON POSTS.

SIZE OF POST IN INCHES.			AREA	LENGTH OF POST IN FEET.					۵ /	72/2	
a.	b.	t.	INS.	10	12	13	14		¥-		
6 ×	6 ×	3	123	40	33	31	27		N	- U -	×
"	46	1	16	52	43	40	35	15	16	18	20
"	44	11	193	64	52	48	42			10	20
6 ×	8 ×		137	4.5	37	34	30				
"	"	1	18	59	48	45	39			1	
"	"	11	217	72	59	54	49				
7 ×	7 ×	1	19	72	59	57	54	47			
"	**	11	231	88	71	69	66	58			
7 ×	. 9 ×	1	21	80	65	63	60	52			
"	"	11	25§	97	79	77	72	64		1	
8 ×	8 ×		167	72	60	55	52	48	45		1
**		1	22	93	79	72	68	64	59		
**	"	11	267	114	96	88	83	78	72	,	1
8 X		1	24	102	86	79	74	69	65		Í.
	**	14	293	125	105	97	91	85	79		
46	"	1 5	311	146	124	114	107	100	93		
9 ×		1	25	116	100	96	90	82	75	67	
"	**	11	308	142	122	118	110	102	92	82	1
"	"	11/2	36	167	144	138	129	120	108	97	
9 ×	10 ×		26	121	104	100	94	86	78	70	
"	**	11	317	148	127	123	115	106	96	86	
"	"	11	371	174	150	144	135	125	112	101	
	10 ×	1	28	137	123	116	109	102	96	85	
**	**	14	344	168	151	142	134	126	118	104	
"	**	11	401	198	178	168	159	149	139	123	
"	"	13	463	227	204	192	180	170	160	141	
$10 \times$		1	30	147	132	124	117	110	103	91	
**		114	367	180	162	153	144	135	127	112	1
**		14	437	213	191	180	169	160	150	132	
4.6	"	13	497	244	219	207	194	183	172	151	1
"	**	2	56	274	246	232	218	206	193	170	
12 X	12 ×		34	180	166	159	152	144	138	125	113
"	**	11	417	221	205	196	187	178	170	154	139
"	"	11	49 ^r / ₂	262	242	232	221	210	201	182	164
"	"	13	56 7	301	278	266	254	242	231	209	189
"	"	2	64	339	313	300	286	272	260	235	213
12 ×	14 ×	11	413	235	217	208	198	189	180	163	147
44		11/2	$52\frac{1}{2}$	278	257	246	235	223	213	193	174
**	66	13	60 ⁸	320	295	283	270	257	245	222	201
66	"	2	68	360	332	318	304	288	276	250	226
46	"	21	75%	399	369	353	337	321	306	277	250

It is believed that the table will prove useful to architects who may wish to use this shape for their columns.



but not enough to be of any serious consequence. Figures 2 and 3 show details of end connections and brackets, and of base-plate.

The beams running at right angles to the web should be tied together by wrought-iron straps passing through holes in the web of

EGYPTIAN OBELISKS.

UCH learning and research have been expended by Zoega and others in endeavoring to ascertain the origin of obelisks, yet without throwing any very satisfactory light on that part of the question. Antiquaries have, in fact, endeavored to find positive evidence where none was to be obtained, for the case itself is not, like that of a particular invention or discovery, referable to some like that of a particular invention or discovery, referable to some precise period or nation. On the contrary, from the very earliest ages it had been the practice to mark some particular spot, the scene of some important event, by what might serve as a durable monument of it; nor would anything more naturally suggest itself for such purpose than fixing in an upright position a stone of unusual dimensions. The Bible makes mention of this practice, and it prevailed not only in the East and in the early ages of the world, but has prevailed among nearly all patients either in a suggest extended. but has prevailed among nearly all nations either in a savage state or in an early stage of civilization. Among the Egyptians, therefore, the practice was not otherwise very remarkable than on account of their continuing it, and bringing such simple primeval monuments to great perfection, making them of stupendous dimensions, working them in the most elaborate manner, and adorning them with hieroglyphics, though not indeed invariably, for there are instances of Egyptian obelisks which are not so sculptured; among others, that in front of St. Peter's, at Rome, and the one before the church of Santa Maria Maggiore.

Small obelisks were sometimes of sandstone or granite, but the larger Egyptian obelisks are all of the red granite of Syene, and it is certainly astonishing how such enormous masses of that material could be quarried out and afterwards removed and placed in their position. We may conjecture that the Egyptians detached the large masses of rock for their obelisks somewhat in the same way that was adopted by the natives of India on the occasion of raising the great granite obelisk at Seringapatam, in the year 1805. instance a groove about two inches wide and deep was chiselled out by the workmen in the line where it was required to separate the stone, which being done, a fire was kindled upon it from end to end and kept up until the stone was sufficiently heated, when the embers were blown off, and cold water poured into the groove, whereby a clear fracture in the stone was made without further labor. Indeed, the mode in which the Egyptians worked their quarries is clear enough at the present day from an inspection of the excavations. Among the Egyptians, when the block had been thus hewn out of the quarry, it was conveyed away by a raft on a canal brought up to the very edge of the rock, either at the time of the inundation, when the water would rise to a sufficient level, or by lowering the block down an inclined plane or platform to the raft, or by digging a canal from the river to the site of the block and bringing a boat under the obelisk, in the manner described by Pliny. The granite block was afterwards polished, and probably raised in the same way as the Seringapatam obelisk, by means of banks of earth banks of earth.

For raising the obelisk before St. Peter's (supposed to be that brought from Heliopolis by Caligula) no fewer than five hundred different projects were submitted by architects and engineers to the pope, Sixtus V, and Domenico Fontana was thought to have accomplished little short of a miracle in rearing it by means of very complex machinery and several hundreds of workmen and horses. The process by which the Lateran obelisk was originally erected at Rome, seems to have been equally complicated and laborious. the Egyptians raised such masses of granite is not known, but probably by a much simpler mode, whether similar or not to that practised in elevating upon its pedestal the one at Seringapatam. According to Colonel Wilks's account of the operations, this obelisk, a single stone about sixty feet long and six square at its base, was placed horizontally upon a mound or platform of earth, secured by a single stone about sixty feet long and six square at its base, was placed horizontally upon a mound or platform of earth, secured by strong walls and level with the top of the pedestal, the base of the obelisk being placed just on the ledge of the pedestal. The shaft having been laid on planks or timber poles, these served as fulcra, by means of which the smaller end or top was gradually raised; wedges were put under it and earth rammed in, which was repeated until the platform became an inclined plane as steep as it could with safety be carried up. The shaft being got thus far out of its horizontal position towards a perpendicular one, ropes were then applied. zontal position towards a perpendicular one, ropes were then applied, worked from a strong timber scaffold nearly as high as the obelisk itself and enclosing the other three sides of the pedestal, other ropes

being also employed in a contrary direction in order to check its coming down on the pedestal with too sudden a shock.

By the Egyptians themselves, obelisks do not appear to have been raised as isolated monuments or single objects, but as the accompaniments to temples and palaces, where they were placed in pairs, that is, one on each side of a large entrance, or propylea, and it may therefore be inferred that some particular signification was attached to them. They were also sometimes placed in the interior courts of temples. With respect to their proportions, the shafts of obelisks were usually about ten diameters in height, and one-fourth narrower at top than at their base. The pyramidion, or apex, was made much more pointed in some obelisks than in others. One singularity is that few Egyptian obelisks are perfectly square, two of their sides

being generally somewhat broader than the other two, which may be accounted for by what has just been said, namely, that they were placed against buildings, and not intended to be isolated objects viewed from every direction. The face of an obelisk is sometimes slightly convex, instead of being quite plain, as is the case with one

side of the Lateran obelisk.

The number of obelisks in Egypt must have been at one time very considerable, yet we are not, therefore, to suppose that the erection of them was a frequent circumstance, since, once formed, they were almost imperishable, and would, therefore, greatly increase in the course of ages. Many that are still remaining are no longer standing, and in some cases several have been found on the same spot, some still standing, others lying on the ground. When the Romans became masters of Egypt they removed many of these monuments to their own capital, among others that of the Lateran, which is the largest now known, its shaft being 105 feet (although it has been reduced a portion at the lower part having been out off in gonese. reduced, a portion at the lower part, having been cut off in consequence of being fractured), and two of its sides 9 feet 84 inches, the quence of being fractured), and two of its sides 9 feet 8½ inches, the other two, 9 feet. This obelisk was first conveyed from Heliopolis to Alexandria by Constantine, and by that emperor's son, Constantius, brought from the latter city to Rome, where it was erected in the Circus Maximus. The shaft of the Lateran obelisk weighs about 445 tons in round numbers. Augustus also had previously brought two from Heliopolis. That which was originally placed in the Vatican Circus by Caligula, and now stands in the piazza of St. Peter's, is next in size to that of the Lateran, though supposed to have been somewhat abridged of its original dimensions. The entire height, including the pedestal and the ornament at top, is about 132 feet; the shaft itself is 83 feet, and 8 feet 10 inches square at its base and 5 feet 11 inches at the other end. In the At-Meidan at its base and 5 feet 11 inches at the other end. In the At-Meidan at Constantinople, there is an obelisk about 50 feet high, said to have been erected by the Emperor Theodosius.

During the calamities that befel Rome under its barbarian in-

vaders after the downfall of the empire, the obelisks were damaged and overthrown, but they have been gradually restored under various pontiffs. — The Architect.



TWO valuable additions have recently ocen made to the first ture of the Greek vases, and although published in such distant cities as London and Boston, the two works are especially adapted to supplement one another. The smaller book is a catalogue of the Greek Physican and Roman vases in the Museum of WO valuable additions have recently been made to the literalogue of the Greek, Etruscan and Roman vases in the Museum of Fine Arts, Boston, which addresses itself primarily to those who make a special study of Greek ceramics, affording exact details as make a special study of Greek ceramics, affording exact details as to what the Museum actually contains, and not only enumerating but describing, and, in most cases illustrating by an outline shape, all the principal vases in the collection. For the benefit, however, of those who are interested in the subject without really knowing much about it, the author has epitomized within the compass of forty-six pages, the substance of the world's knowledge regarding these wonderful remains of Greek art. presenting the facts in so at these wonderful remains of Greek art, presenting the facts in so attractive and concise a form, that for the general student there is little left to be desired.

The second work before us² is far more ambitious in detail, though much more restricted in its scope. It is a handsome folio, illustrating very thoroughly the choice examples of Greek vase painting, considered simply as pictures, with a perhaps unnecessarily exhaustive notice of the different artists whose names have been identified with these creations. It is to be regretted that in the latter volume, so little account is taken of contours and of decoration as such, and it might also be wished that the pictures could have been reproduced in something approaching the original blacks and reds, but even carried out as it is in the crude black and white, the volume places before the student very admirably, the typical examples of a species of decoration which was one of the most remarkable that the world has ever seen.

It is doubtful if any one of the many expressions of the so-called allied arts can be studied by the architect with as much immediate and practical and professional advantage, or with as marked results in cultivation of taste, as is afforded by careful study of the Greek vases. The architect in the practice of his profession has primarily to deal with subtileties of line and harmony of *ensemble*, while such decoration as comes strictly within the line of architecture is governed by almost exactly the rules which apply to the decoration of a vase. Especially is this true of decoration which is applied to moulded or irregular surfaces, in which the lines of color suggest, and at times emphasize, the contour and form, while strictly subordinated to a sense of unity and harmony which should instinctively repel a false note in shape or tone, not as a result so much of reasoning as of artistic intuition. It was precisely this subtile intuition

1" Museum of Fine Arts, Boston. Catalogue of Greek, Etruscan and Roman Vases:" By Edward Robinson, Curator of Classical Antiquities. Houghton, Mifflin & Co., Boston and New York.

2" Greek Vase Painting." A selection of forty-three full-page pictures with explanatory text. By J. E. Harrison and D. S. MacColl, London: T. Fisher Unwin. For sale by the Century Co., New York.

in the choice of decorative detail from which sprang the most potent artistic feeling of Greek art, whether displayed on the broad field of a Parthenon frieze, or concentrated upon the concavity of a bit of pottery, and while the care bestowed upon the elaboration of the frieze is the result of far more study and refinement, the seemingly rude ceramics show exactly the same spirit and often display it in a freer and perhaps more readily appreciable manner, admitting one almost, as it were, to the processes by which the artist was able to choose the exact species of decoration which appealed to him as preëminently adapted to the form under his hand. It is to be wondered that these Greek remains have been so comparatively little studied by architectural students, but the inaccessibility of the objects themselves and their comparative uninterestingness at first glance coupled with the manifest crudity of technical qualities, doubtless deter the young men whom every year we send to Europe for study from spending a great deal of time over such bits of pot-tery. It surely is not the intrinsic beauty of the drawing upon the vases which appeals to one, but the charm is rather in that they teach a keen, subtile appreciation of decorative values, a nice feeling for delicacies of form, and, above all, the beauty of pure line and graceful balance, coupled with a recognition of the value of innate graceful balance, coupled with a recognition of the value of innacting dignity, distinguished from mere size, as an essential element in an artistic design whether actually large or small. This it is that makes one who has begun the study of the Greek vases, so enthus the study of the dignitive of the study of the greek vases, so enthus the study of the greek vases. It is siastic in regard to their educational and sesthetic influences. It is the truth to harmony manifest in all of the best of the Greek vases, both in decoration and in shape, that amply atones for the incomplete and often almost childish drawing, and that stamps even the smallest of these productions, with a portion of the same spirit that led to the glorious successes of the Parthenon and the Niké Apteros.

The fact that the first knowledge which Europeans obtained of these pottery fragments was derived from vases found in the tombs of Etruria, led to a misconception of their true antecedents, and for many years the term Etruscan was applied almost exclusively to them. Decorated pottery has always existed and probably always them. Decorated pottery has always existed and probably always will, but the choice examples of Greek vases date almost entirely from a period beginning in the early part of the fifth century, B. C., and extending until about the middle of the third century, B. C. The art lasted nearly half a century longer in the Greek colonies of Italy, with certain modifications which are easily distinguishable and which consist mainly in an overloading of decoration, and a carelessness in that sense of fitness which is so marked a characteristic of the purely Greek vases. The best period was coincident with the building of the Parthenon, 430-440 B. C., consequently the Greek vases which are most highly prized come to us as, in a way, signed documents, attesting not only the occupations and personal characteristics of the Greeks, but typifying, as well, the art impulses of the highest period of development which that richly endowed people attained. The Athenians were first among the Greeks to recognize the true value of these great documents in miniature. By the end of the sixth century, B. C., Athens led the world in the manufacture of artistic pottery, and for nearly two centuries controlled the market, practically setting the styles, and sending annually ship-loads of pottery to all civilized countries.

The earlier vases are distinguished by figures and decorations, painted with black enamel paint, upon a dull red ground. The later and finer vases are nearly all painted with a black background, leaving the figures standing out in red. There are a number of the painted with a black background, leaving the figures standing out in red. ground, leaving the figures standing out in red. There are a number of curious reminders in these vases of the archaism from which, notwithstanding all their development in sculpture, the Greeks never succeeded in entirely freeing themselves. Thus, the flesh of the women was always painted white, while that of the men was left black. A singular convention, which was practised through all the stages of the black-figured style, was that of making the eyes of all female figures, whether women or animals, almond shape, and those of male figures perfectly round. The eye was drawn in full front, even though the face was in profile. It was not until about 460 B. C., when the change from black to red figures took place, a little before the Persian invasion, that the drawing began to lose its stiff and awkward character and to be ngures took place, a little before the Fersian invasion, that the drawing began to lose its stiff and awkward character and to be treated in detail as drawing, independent in a measure of its value as a portion of vase decoration. But in proportion as the technical qualities of the vase-painting improved, the style and the essential characteristics of the work began to decline, the ceramic arts approaching decadence some time before the sister arts of sculpture and architecture began to show traces of deterioration. The handand architecture began to show traces of deterioration. The handmade vases disappeared almost entirely in the early part of the
third century, B. C., giving way to shapes which were cast in
moulds or stamped by crude machinery, the artistic sentiment
almost entirely disappearing.

The Boston Museum is specially fortunate in possessing an example of the work of one of the best of the Greek vase-painters, Euphro-

nios, a Kylix decorated inside and out, which was found near Viterbo in 1830, and loaned to the Museum in 1892. With Mr. Robinson's catalogue, and Messrs. Harrison & MacColl's illustrations, the student in this country has an opportunity to obtain a very complete knowledge of this important subject. It is, however, to be regretted, that neither volume considers the exquisite foliage and conventional decorations which are so pronounced on Greek vases,

and which so well repay study.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

THE HOOPER FOUNTAIN, NEW YORK, N. Y. MR. GEORGE MARTIN HUSS, ARCHITECT, NEW YORK, N. Y.

[Issued with the International and Imperial Editions only.]

WHEN John Hooper died at his home in Brooklyn, in 1889, aged seventy-three years, he had accumulated a fortune, was a large owner of New York and Brooklyn real estate, and from his fortune had been a liberal and regular contributor to the support of charitable institutions. On probation, his will was found to contain, amongst numerous and varied public bequests, one for \$5,000 to be spent in erecting a drinking-fountain, which was to be presented to the City of New York. The selection of a site was a matter of considerable discussion; the place finally decided upon being the junction of One Hundred and Fifty-fifth Street, St. Nicholas and Edgecombe Avenues and the northern end of the Speedway, which has seemed to be a wise one. In the settlement of the estate the original bequest of \$5,000 was reduced by the inheritance tax and in order that the designs of the architect might be carried out without modification, the Washington Heights Association agreed to lay the foundation for the fountain free of expense to the trustees. The latter, Messrs. for the fountain free of expense to the trustees. The latter, Messrs. B. Frank Hooper, son of Mr. Hooper, and William Milne, of the People's Bank, on Canal Street, accepted this offer. Work has been begun on this foundation. The design as accepted, and as it will be executed, shows a horse drinking fountain or basin of circular form, nine feet six inches in diameter and about one foot three inches in depth, cut from a solid block of pink Italian granite. It is thought this is one of the largest dringing-basins in the country made from a single piece of stone. The south side of this basin is engaged by the base of the column on the opposite side of which, nearly on the line of the of the column on the opposite side of which, nearly on the southern sidewalk of One Hundred and Fifty-fifth Street, facing down St. Nicholas Avenue, is the drinking-place for the people and this on either side, are places for dogs. The large at the base of this, on either side, are places for dogs. The large basin is supplied with water through a cast-bronze lion's head, while small replicas of this head furnish the dogs' basins. An artistic arched bronze pipe throws a grateful stream of water into the people's basin. Six upright granite posts protect the sides of the people's fountain from horses, carriages or wheel-hubs. The four basins are grouped around a column twenty-one and one-half inches in diameter, crowned with a richly-carved Ionic cap, which rises fifteen feet above the upper rim of the basin. On top of the column cap and rising from a gracefully-moulded base in bronze is a spherical plate-glass and bronze lantern, which terminates in a bronze ornamental weather-vane about twenty-eight feet from the a bronze ornamental weather-vane about twenty-eight feet from the ground. The column, like the remainder of the fountain, is of Italian pink granite and bears the inscription: "Presented to the City of New York by John Hooper. Erected 1894." The contract for building the fountain was given to the New England Monument Company, of New York City, who have carried forward the work with celerity and skill.

THE SAN FRANCISCO POLYCLINIC, SAN FRANCISCO, CAL. MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL.

[Issued with the International and Imperial Editions only.]

COLONIAL ARCHITECTURE OF THE GENESEE VALLEY: MANTELS
IN THE CULVER HOMESTEAD, BRIGHTON, N. Y. MEASURED
AND DRAWN BY MR. C. F. BRAGDON, ARCHITECT, ROCHESTER,
N. Y.

[Issued with the International and Imperial Editions only.]

SEE article elsewhere in this issue.

COLONIAL ARCHITECTURE OF THE GENESEE VALLEY: DETAILS OF THE TILLMAN HOUSE, GENEVA, N. Y. MEASURED AND DRAWN BY MR. C. F. BRAGDON, ARCHITECT, ROCHESTER, N. Y.

[Issued with the International and Imperial Editions only.]

SEE article elsewhere in this issue.

HOUSE FOR E. SOHMAN, ESQ., BENSONHURST, N. Y. MESSRS. PARFITT BROS., ARCHITECT, BROOKLYN, N. Y.

[Issued with the International and Imperial Editions only.]

CENTRAL FIRE-STATION, SOMERVILLE, MASS. MR. A. H. GOULD, ARCHITECT, SOMERVILLE, MASS.

THE building is practically of two sections, the main part, which is to be three stories high, is to project some ten feet in front of the side portion, which is to be two stories high. The entire frontage is about eighty-eight feet. The depth of the main portion is seventy-

five feet and the depth of the side portion is sixty-seven feet. Selected hard brick is to be the material for construction, with pink granite trimmings and galvanized-iron cornices. The base of the tower is also to be of granite. The roof is to be slated. The main apparatus-room is to be 46' x 40', and is to provide space for three pieces of apparatus; there will, consequently, be three entrances. There is ample stable-room at the rear of this room, and between the two are stalls for eight horses. The apparatus-room in the annex will give space for two additional pieces of apparatus and there will be two stalls at the rear. The second story of the main building will contain a recreation-room, 25' x 35' in size, five good-sized bedrooms, a large toilet and wash room for general use, and lockers conveniently arranged for the use of the men. The rear portion of this floor will be devoted to a large hay and grain loft, with chutes and an elevator running below. There will be also five sliding-poles from this floor to the main floor, and a flight of stairs in about the centre of the building. In the annex will be the rooms for the chief of the department, which will consist of a general office, and opening out of this a private office. The latter will have a fireplace and mantel, and sliding doors will separate the two rooms. There will also be a bath-room in connection with the chief's apartments. Back of these rooms will be a bath-room for the use of the men, two bedrooms, and in the rear a large workshop. The third floor of the main building will be devoted to the electrical department of the fire-alarm system. The central portion of this floor will be used for a large battery-room, 34' x 38', and in the front room will be ample space for the instruments. The rear room will be a wash-room, to be used in connection with the battery-room. The basement is to be concreted, and will contain the heating-apparatus, coal, etc., and will provide room for storage. The tower will be eighty-eight feet high and about ten fee

COLONIAL ARCHITECTURE OF THE GENESEE VALLEY: THE FOL-GER HOUSE, GENEVA, N. Y. MEASURED AND DRAWN BY MR. C. F. BRAGDON, ARCHITECT, ROCHESTER, N. Y.

SEE article elsewhere in this issue.

COLONIAL ARCHITECTURE OF THE GENESER VALLEY: THE HOL-LAND PURCHASE LAND OFFICE, BATAVIA, N. Y. MEASURED AND DRAWN BY MR. C. F. BRAGDON, ARCHITECT, ROCHESTER, N. Y.

SEE article elsewhere in this issue.

[Additional Illustrations in the International Edition.]

THE GERMAN VILLAGE, MIDWAY PLAISANCE, WORLD'S COLUM-BIAN EXHIBITION, CHICAGO, ILL.

[Gelatine Print.]

SCHOOL BOARD OFFICES, READING, ENG. MESSRS. CHARLES SMITH & SON, ARCHITECTS, READING, ENG.

WE reproduce this week a perspective sketch of the new offices recently erected by the Reading School Board. The new building is in a central position, and contains the following accommodation: On the ground-floor—clerks' offices, accountants' offices, committee-room and attendance officer's office, with waiting-room and separate side entrance. On the first floor—board-room, the clerk's private office, committee-room and lavatories. On the basement—caretaker's quarters and heating-chamber. The building is of local red brick, with Doulting stone dressings.

HOUSE AT WREXHAM, ENG. MR. T. G. WILLIAMS, M. S. A., AR-CHITECT, LIVERPOOL, ENG.

This house, which has been erected for Dr. E. D. Evans, is situated at the corner of Egerton and Lord Streets, having main entrance from Egerton Street, and is built in Ruabon brick with terracotta and Cefn stone dressings. It contains on the ground-floor breakfast, drawing and dining rooms, kitchen, pantry, scullery, etc., with side entrance for patients, giving access to waiting-room, consulting-room and surgery. On the first floor are nursery, five bedrooms, lavatory, bath-room and conveniences, with attics over. In the rear are the stable buildings, comprising two-stall stable, loosebox, harness-room, coach-house with loft over, also wash-house, coals and other conveniences.

BALLARD, COOMBE WARREN, SURREY, ENG.

Ballard is the name of a large house erected at Coombe Warren, near Kingston-on-Thames, in 1873, for Mr. Edgar. It was purchased in 1884 by Captain Lee Guinness, of Dublin, who erected a

new wing, coach-houses and stabling, and other extensive additions, increasing the original length of frontage of the house, etc., from 200 to 400 feet. The new additions, stabling and lodge were erected from the designs of Mr. W. F. Potter, architect, of Hatcham, and are faced with red bricks and Portland stone dressings.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE RESPONSIBILITY OF ARCHITECTS.

DENVER, Col., June 29, 1891.

To the Editors of the American Architect:-

Dear Sirs, — I read with interest the rules defining the responsibility of German architects, published in your paper of June 16, and I would like to suggest that it would be an excellent idea for some one, say the author of the papers on "Architect, Owner and Builder before the Law," to prepare a similar statement for American architects. While such a statement might not have much effect with the courts, it would give architects a comprehensive idea of the responsibilities which they must assume, and also of those for which they are not liable. The writer has always believed that if the responsibility of the architect in the matter of safe construction and the protection of his client were better understood and more often enforced, it would lead to a weeding-out from the profession of many who would be unable or afraid to meet the responsibility imposed upon them.

Again, payment for any service is generally somewhat in proportion to the responsibility connected with it, and if architects and their clients more fully recognized the responsibility connected with their profession, I believe there would be less cutting in commissions. In connection with this subject, I recently had my attention called to an Ohio State Law relating to the planning of public buildings, which makes the architect liable for any damage or loss of life or limb resulting from failure due to improper or unsafe construction. This is the strictest building law the writer has ever seen, and thinking perhaps some Ohio architects may not have seen it, and that other architects may be interested in it, I quote below the first and last sections of the law :

An Act to prevent the erection of dangerous buildings for public use.

(Ohio.)
(Passed Apr. 15, 1889; took effect June 15, 1889, 86 U. 381.)
"Section 1. Be it enacted by the general assembly of the State
"of Ohio, that it shall be unlawful for any person, society, firm, agent, "representative of any private or corporative authority or society; "or any committee, commission or board acting under any authority "whatsoever, to erect or cause to be erected; or for any architect, "engineer, builder or other person to furnish any plan, description or "specification for the purpose of erecting in the State of Ohio any "structure, room or place where persons are invited, expected or per-"mitted to assemble; or for the purpose of entertainment, judgment, "amusement, instruction, betterment, treatment or care; or to make "any addition to, or alterations therein, which shall in construction, "arrangement, or means of egress be dangerous to the health or lives "of persons so assembled."

The law then proceeds to define the necessary provisions for stairways, the loads for floors and roof, and the safe loads for different classes of masonry, and the thickness of walls. Requirements are also made for the providing of fire escapes, under certain conditions, and for proper heating and ventilation. The penalty of violating this law is as follows:

"Any person who violates any of the requirements of this Act, "shall be deemed guilty of a misdemeanor, and upon conviction "thereof shall be fined in any sum not less than \$100 nor more than "\$1,000, or be imprisoned in the county jail not less than ten nor more "than sixty days, or both, at the discretion of the court, and shall be "also liable to any person injured by reason of his violation of the "requirements of this Act, and shall be also liable for criminal prose-"cution for loss of life."

It is also made the duty of the prosecuting attorney in each county to see that the penalties of the law are enforced.

This Act does not apply to cities of the first class where the con-

struction of buildings is regulated by statute under the direction of

a building inspector.

It will be seen from the above that the failure of any such building, especially if resulting in loss of life or limb, will prove a very ing, especially if resulting in loss of life or limb, will prove a very serious matter to the person who prepared the plans or specifications for its erection. Any architect, therefore, who would undertake to guess at the proper size of his timbers, piers, trusses, and girders, must be very fool-hardy indeed, or else have nothing to lose,

Yours truly,

F. E. KIDDER.

[WE agree entirely with Mr. Kidder in the belief that a more just sense of the responsibility of architects for their work would do much to elevate the profession, and improve its position before the public. As to a statement of the liabilities which architects in this country incur, it should be remembered that we have no Code, such as exists in Germany and France,

and that the common-law relations of architects to their clients and the public must be ascertained from the decisions of courts, which often take different views of the law in different States; so that such a statement, to be of any use, would be quite long, and it is doubtful whether any material abridgement could be made of the chapters devoted to the subject in "Architect, Owner and Builder before the Law," without unfavorably affecting the correctness of their presentation of the decisions. The completed book is to be published by Messrs. Macmillan & Cl., of New York and London, in September. After it appears, if any one wishes further information in regard to any of the matters of which it treats, the author will be happy to give such additional explanation as his notes may afford.—
Eds. American Architect.]

DISPOSAL OF GARBAGE IN APARTMENT-HOUSES.

CINCINNATI, O., June 29, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs,-We are in need of some information for which we do not know where to look, so apply to you, thinking you may be able to assist us, either with some information bearing directly on the

To every architect who has been commissioned to plan an apartment building, one of the most serious problems to solve satisfactorily must have been the disposal of the garbage from the various kitchens

In our city, there seems to be no satisfactory provision in any of the apartment-buildings for getting the garbage to the cellar or to the street—even some of those recently completed depending on the street—even some of those recently completed adjoining on the janitors calling at each apartment every morning and collecting the garbage in galvanized-iron cans and taking it down to the cellar. Now what we wish to know is, how or where to obtain informa-tion as to how this question is solved in the fine apartment buildings

It is easy enough to dispose of the garbage when it has once reached the cellar, but to get it there in a satisfactory manner, without having to experiment, is the problem that is confronting us.

We have just finished drawings for a large apartment-building and provided for each tier of kitchens a 16" x 20" brick flue, lined with

brick dipped, or rather soaked in, and laid up with melted tar, and at the bottom of each chute we provide garbage-pits and provide these pits with iron doors and frames. In each kitchen we place a "Connor" steel ash-chute. We close the upper end of garbage-chutes about four feet above highest inlet and carry up a 2" castiron vent-pipe through roof. From near the foot of each garbage-chute we run a 12" vent-pipe over to a large vent-stack, in which we place a stack-heater and propose, by this means, to exhaust the air from the garbage-chutes and create an inward current from each kitchen through the Connor chutes either when they are partly open or should there be any leakage about or through them. of the chutes we have catch-basins with screens and hinged covers, so that the chutes and pits can be washed out with a hose.

This is merely an arrangement we have thought out ourselves and never having tried it, realize it is something of an experiment and would prefer using some devise that has been tried and found atisfactory. Any information you can give us on this subject will be much appreciated by

Yours truly, DES JARDINS & HAYWARD.

Yours truly, DES JARDINS & HAYWARD.

[The arrangement described is very well planned. In the Eastern cities it is usual to provide very similar shafts made of cast-iron pipes — which are more easily kept cleau than brickwork — carried up full size, above the roof, with the top open for ventilation, and with slides with doors, nearly airtight, from each kitchen. The main receptacle is usually above ground, outside the building, in the yard. It is not common to provide special ventilation to a heated flue, although this, if well arranged, would be advantageous. The upward current produced in the shaft itself, by the warmth from the kitchens, is usually enough to keep in foul dors. Various manufacturers of iron goods for building furnish pipes, chutes, covers, etc., of different patterns. — Eds. American Architect.]

THE WORLD'S FAIR CANADIAN BUILDING: A CORRECTION.

DEPARTMENT OF PUBLIC WORKS, CANADA OTTAWA, CAN., July 14, 1894.

To the Editors of the American Architect:-

Dear Sirs, — Having reference to the description of the Canadian building at the Columbian Exposition, which appeared in the American Architect of June 23, and in which you credit Mr. Edis with making the designs, I have the honor to inform you that the designs for the building in question were made by this Department.

I have the honor to be, Sir,

Your obedient servant, E. F. E. Roy, Secretary.

[WE regret the error now pointed out, but as the information principle was furnished by the Director of Works of the World's Fair himself, it seems likely that the mistake may creep into sundry histories and official publications if attention is not directed to it.—Eds. American Archi-

L'Horloge de la Mort du Roi. — In the courtyard of the palace of Versailles is a clock with one hand, called "L'Horloge de la Mort du Roi." It contains no works, but consists merely of a face in the form of a sun, surrounded by rays. On the death of a king the hand is set to the moment of his demise, and remains unaltered till his successor has rejoined him in the grave. This custom originated under Louis XIII, and continued until the Revolution. It was revived on the death of Louis XVIII, and the hand still continues fixed on the precise moment of that monarch's death. — Philadelphia Record.





BOSTON, MASS. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts. New York, N. Y.— Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.



Salisbury Spire.—The spire of Salisbury Cathedral is believed to have been added when Robert de Wyvile was bishop, a prelate of whom this ugly character has been transmitted to posterity, that it was hard to say whether he was more dunce or dwarf, more unlearned or unhandsome. While he held the see, a mandate was obtained from Edward III for taking down the walls of the former cathedral at Old Sarum, and of the houses there which had belonged to the bishop and the chapter, that their materials might be applied, as the king's gift, to the improvement of the church at Salisbury. Not only the spire, but the two upper stories of the tower were added when these improvements were made. This was so bold an undertaking in the architect that nothing but success could justify it. Michael Angelo's conception of hanging in the air the dome of St. Peter's did not imply a stronger confidence in his own skill than was manifested in this ambitious design of raising one of the loftiest spires in the world upon a building of hanging in the air the dome of St. Peter's did not imply a stronger confidence in his own skill than was manifested in this ambitious design of raising one of the loftiest spires in the world upon a building where the foundations had already received the load which they were calculated to support. The old wall of the tower, though strong enough when it was the summit of the pile, was slight in relation to the weight which it was now to bear. Half its thickness was occupied by an open gallery, and moreover it was perforated by eight doors, eight windows, and a staircase at each of its four angles. For the purpose of strengthening it, the windows were filled up; 112 additional supports were introduced into this part of the tower, exclusive of iron braces; and 387 superficial feet of new foundation were formed. It is presumed also that at this time the arches and counterarches were raised across the small transept. The difficulties were so evident and so great that it has been said they were enough to have frightened any man in his senses from pursuing so rash and dangerous an undertaking. It has, however, withstood the storms and the sap of more than five centuries, and we are told that, if carefully inspected, it may remain twice five centuries to come. Two stories of the tower were evidently raised at the time when the spire was added. From the centre of the tower the spire rises; four of its sides (for it is octangular) resting on the walls of the tower, and four on arches raised at the angles. The wall of the tower is there 5 feet thick, two of which are occupied by the base of the spire gradually duminishes till, at the height of about 20 feet, it is reduced to 9 inches, of which thickness it continues to the summit. A settlement took place in this beautiful structure, it is believed, soon after its completion, at the western side, or rather in the piers or clustered columns, under the northwestern and southwestern angles A settlement took place in this beautiful structure, it is believed, soon after its completion, at the western side, or rather in the piers or clustered columns, under the northwestern and southwestern angles of the tower. Such methods as were deemed best have been employed at different times to counteract the danger. At the top of the parapet of the tower, the tower declines 9 inches to the south and more than 3 to the west; but at the capstone of the spire the declination is 24 1-2 inches to the south and 16 1-4 to the west. In such an elevation this is not perceptible to the most practised eye, the height being 404 feet, according to the most approved measurement. That of Strasburg is 456; that of Vienna, which exceeds all others, 465; but Salisbury is the loftiest stone building that has ever been raised in this island. The spire of old St. Paul's, which was 520 feet in height, was constructed mostly, if not entirely, of timber and lead. — The Architect.

PROTECTION FROM LIGHTNING. — Official German reports show that the number of deaths caused by lightning have increased by about two hundred per cent from the year 1870 to 1882. The author attributes this fact to the gradual disappearance of forests and to the greater use of metals in building construction. Lightning protectors have yielded excellent results in most cases, and it is essential high buildings should be provided with them. There are in general use two types: 1, the Franklin lightning protector; 2, the Melsens lightning protector. The former is the older of the two, dating as far back as 1752. It consists of a metal rod placed above the building and conprotector. The folder is the odder that two, dampers had been start of the folder in t

to neutralize the charge in the clouds to a certain degree. That such an action takes place has been conclusively proved by M. Courtoy. The existence of such a protector has no influence on neighboring buildings. There is a great economy in this system, as the circuit and forks may be made light, and, consequently, easily fixed. The difference in price between the two systems is considerable. Owing to the number of paths to earth through the building, less attention is required than with the other system. The author states that no building, to his knowledge, has ever been struck by lightning which was carefully fitted with such a system, and where Melsens's principles have been observed. This system is largely used in Belgium; it has been recommended by L'Académie des Sciences in France, notably for powder factories and magazines, and has also been adopted in England for protecting ships. — Boston Transcript.

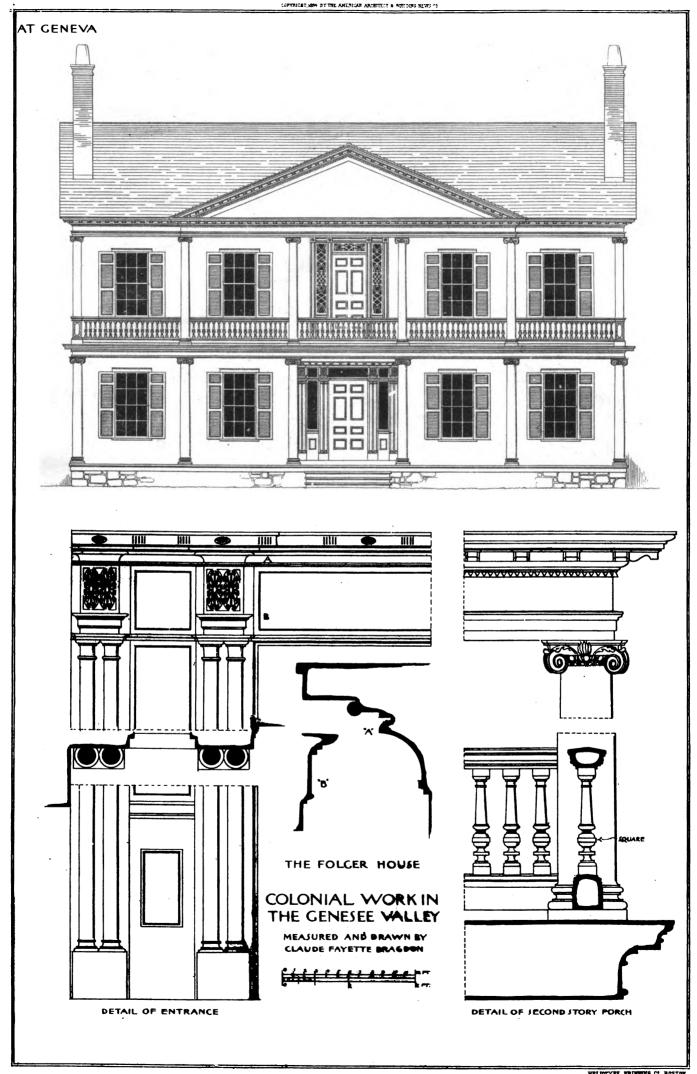
A Regular who thinks. — "Carrying a gun and shooting when you are ordered to shoot is a business the same as laying brick or making a boiler to the average regular soldier," said one of the privates of the company now guarding the Custom-house. "These people," he continued, "who call themselves laboring people, and who jeer at us and insult us, seem to forget that when a man enters the regular army in times of peace, he doesn't do it from any particular motives of patriotism. It is a business with him, and it has less of freedom in it than any class of labor that I know anything about. A regular is absolutely under the eye of his superior, day and night. He can't go across the street without permission. He has requirements made of him every hour in the day. He undergoes about as many privations as any laboring man I ever heard of. I wonder if some of these civilians who think proper to jeer at us and insult us, as many have done in Chicago, ever stop to realize what we have done for their welfare and good in other times? I wonder if they think we have been kept, sometimes for months and years, away from the civilization which has given them so many advantages? I wonder if they think we are doing this thing for our health? The regular private is as much of a laboring man as any now on a strike; he is under a contract, the violation of which means disgrace, if not death. And yet it has remained for us, who have been among Indians and snow-storms and all privations, to come here, under orders, to be insulted and spitefully used."—
Chicago Herald.

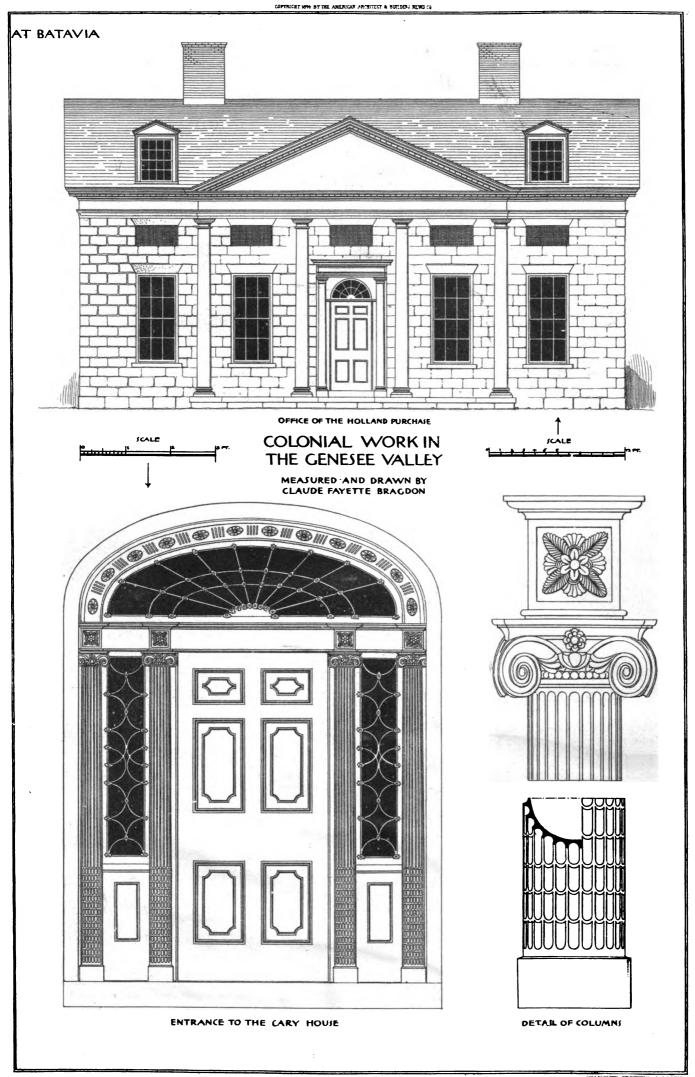
ERECT INHUMATIONS.—Clement Spelman, of Narburg, Recorder of Nottingham, who died in 1679, is immured upright enclosed in a pillar in Narburg Church, so that the inscription is directly against his face. Thomas Cooke, who was a governor of the Bank of England, from 1737 to 1739, and who had formerly been a merchant residing in Constantinople, died at Stoke Newington, August 12, 1752, and by his directions his body was carried to Modern College, Blackheath, of which he was a trustee; it was then taken out of the coffin and buried in a winding sheet upright in the ground, according to the English custom. Jonson was buried at Westminster in an upright position; possibly this may have been on account of the large fee demanded for a full-sized grave. It was for a long time supposed that the story was possibly this may have been on account of the large fee demanded for a full-sized grave. It was for a long time supposed that the story was invented to account for the smallness of the gravestone; but, on the grave being opened some years since, the dramatist's remains were discovered in the attitude indicated by tradition. The following quotation from Hearne's "Collection of Antiquarian Discourses," Vol. I., p. 212, shows that the upright position of burial was anciently adopted in the case of captains of the army: "For them above the grounde buryed, I have by tradition heard that when anye notable captaine died in battle or camps the souldyers used to take his bodye and to settle him on his feet uprighte and put his launce or pike into his hand and then his fellowe souldyers did travel and every man bringe so much earth and laye about him as should cover him and mount up to cover the top of the pike."— Westminster Review.

An Object-Lesson in Profits: the other Side. — The report just made public of the result of the attempt to operate a rolling-mill at Hubbard, Ohio, on the cooperative plan is extremely interesting. After paying up all outstanding indebtedness there will be a surplus of about 25 per cent to distribute to the stockholders out of the 50 per cent of the wages that have been retained by the managers to create a capital. This is equivalent to a reduction of 25 per cent in wages for the time that the mill was in operation; in other words, in order to get out even, the company could only afford to pay 75 per cent of the wage scale. This should be a practical lesson to rolling-mill hands of the difficulties which now beset employers. If men who are working absolutely in their own interest, and are, therefore, watching every corner and practising the utmost economy in fuel consumption, care of furnaces, breakage of rolls, etc., cannot show better results, how can they expect full wages to be paid by manufacturers whose workmen have no financial interest whatever in the plant? By what hocus-pocus can the average mill make a profit when a mill run by first-class men, as this one undoubtedly was, shows such a loss? — Iron Age.

Steps to preserve Karnack from the Nile Floods.—The Society for the Preservation of the Monuments of Ancient Egypt, the headquarters of which are in London, is doing good work at the mines of Karnack. The French engineer, Grand Bey, showed that the Nile water, which floods these ruins annually, takes up from the soil certain salts that gradually eat away the stones of Karnack near their base, and have already caused the fall of many pillars. The Society has made arrangements with M. Jacques de Morgan, Director-General of Antiquities, to pay the expenses of the erection and running for two years of a steam-pump and engine-house, all supplied by the Society. The pump is to carry off the inundation water as fast as it enters. After two years the Egyptian Government is to assume the cost of keeping up the plant and operating it. The Society has collected about \$3,500 and wants \$3,000 more. Donations may be sent to Edward J. Poynter, Honorary Secretary, 28 Albert Gate, London. — N. Y. Times.

No. 969. American Architect and Building News. July 21, 1394.





No. 970

Entered at the Post-Office at Boston as second-class matter. JULY 28, 1894.



USTRATIONS: —
Union Station, Toronto, Can. — A House on the Foothills. —
House at Germantown, Pa. — "Houses at Ghent," Norfolk,
Va. — Hall in House at Washingtonville, N. Y.
Additional: South Front of the California State Building,
World's Fair, Chicago, Ill. — Sketches and Details at Ragusa,
Italy: Two Plates. — Tudor Chambers, 54 and 55 Cornhill,
London, Eng. — Garden Front: Endalls Manor, Eng. ILLUSTRATIONS:

THE history of the recent Debs strike affords some glimpses into the purposes of labor leaders, and the way in which they utilize circumstances for their own benefit, which are worth keeping in mind by the public. Early in the course of the strike, the ridiculous pretence that it was ordered in aid of the Pullman workmen was abandoned, and the open avowal was made that this was merely a pretext for bringing on a struggle between the American Railway Union, Debs's yearold organization, and the Brotherhood of Locomotive Engineers, with some other sober and rational associations of railway-men, in the hope of destroying the latter organizations entirely, or subjecting them to the Railway Union. Thanks to the discernment and coolness of Mr. Arthur, and some of the officers of the firemen's unions, who deserve great credit for having kept their heads in the midst of the commotion, the attack upon them failed, and, although Debs and his associates announce, from their headquarters in the Chicago jail, that "the Brotherhood of Locomotive Engineers is practically dead," there is no doubt, not only that it is in perfect health, but that it has gained, through the brave and honorable conduct of many of its local associations and individual members, a hold upon the confidence and regard of the public which will be of inestimable value to it and its members for many years to come. That so many of the latter, after quietly voting, in reply to Debs's summons, that they had no grievance, and did not think it proper to violate their contracts with the railroad companies, should have deliberately exposed themselves for weeks to the vengeance of Debs and his swarms of foreign ruffians, rather than break their promises to their employers, is the most encouraging indication for the future that the history of the strike affords.

EW persons outside the ranks of certain trades realize the force of the appeal to foor this D force of the appeal to fear which Debs and his like bring to bear on those whom they wish to subject. The invariable formula with which they reply to remonstrance is that "they caunot be held responsible for the excesses of individbut the generalship with which simultaneous attacks were made on railway servants and property, by mobs of brutish Hungarians and Bohemians, at places so widely sepa-rated as to divide the slender force of defenders, shows plainly, that the campaign of incendiarism and destruction was intelligently planned, and it is probable that only the cowardice of the foreigners, thousands of whom ran before a few dozen bayonets, prevented much of the intended mischief. The temper in which the ringleaders, encouraged by official apathy or sympathy, were disposed to deal with those who resisted their dictation is sufficiently shown by the circular placarded about the Chicago Stock Yards, denouncing the men who returned to their work as "scabs," and calling upon all persons to "treat them as such," accompanied by other posters, explaining the latter expression by advocating that all "scabs" should be immediately assassinated. We, who read of such things in the newspapers with mild deprecation, need, in order to appreciate the resolution required by the faithful engineers and firemen,

to imagine the fences around our houses and offices adorned with placards, officially signed by persons intimately connected with the Governor of the State and the executive department of the city, "branding" us as "scabs," and fiercely urging the public to "treat us as such," explained by others representing us hanging to lamp-posts, and inviting all persons out of employment to join at once in carrying out this amiable suggestion. If, in connection with these incidents, we were to miss, at frequent intervals, our associates in business from their accustomed places, a blood-stain at their doors indicating what had become of them, we must acknowledge that we should be strongly tempted to close our offices for a time; and that to go on with our work, simply to fulfil our engagements with our clients, would require a moral and physical courage on which we might justly plume ourselves for the rest of our days. this is just what the men have done who have remained at work during the furious reign of Debs and Sovereign, and, modest as they suppose to be their part in the history of this Republic, the country owes them a debt of gratitude which it can never repay. Years hence, when Americans can earn an honest living in their own way, without being "branded," or "treated as such," at the dictation of any despot, the brave engineers of our western railroads will, we hope, be honored as they deserve.

MO show how a few arrogant leaders of a small fraction of the members of any trade the members of any trade can throw the industry of a great nation into disorder, it is curious to read the history of the "sympathetic strike" which Sovereign, who seems to have pitched heels over head into the snare which the wily Debs laid for him, undertook to bring about in the organiza-tion which he supposed that he controlled. Meetings were called of various branches of the order, at which "sympathetic strikes" were voted, with more or less enthusiasm, according to circumstances. On talking over the vote, the more sensible participants discovered that a majority of the voters were members out of employment, who, by going on strike, would become entitled to "strike pay," at the expense of their more fortunate brethren, and, of course, were delighted at an opportunity for voting themselves into an income. This observation somewhat mitigated the "sympathy" of the men who were still at work for the victims of Mr. Pullman's barbarity, and the second vote, to fix a day for the sympathetic strike to begin was indefinitely postponed. If the interested motives of the intending strikers had not been so quickly discovered, the country might now be suffering from a strike in nearly all branches of industry, instigated by one ambitious schemer in Chicago, carried out by appealing to the selfish interest of the unemployed members of the trades unions, and extended to the workingmen not belonging to the unions by pure compulsion. Notwithstanding the ridiculous bragging of the labor magnates, there is good evidence that not more than fifteen per cent of the workingmen, even in Chicago, belong to the unions; yet these unions, or rather, their most selfish and noisy members, control their entire trade, and are, in their turn, controlled by a few men still more selfish and noisy, and more artful. The basis of all this hierarchy is, in most cases, the vilest terrorism. To refuse to obey the orders of the dictators, whatever they may be, is to be "branded" as a "scab," and to be a scab is, at present, to be exposed to constant fear of maining or assassination; to hold one's place only until such time as it may suit the union dictators to order the shops "struck" against all but their constituents; to be shut out from public work, which is generally reserved for the representatives of some compact body of voters; and to be regarded with suspicion and aversion by all employers of labor, who know well the consequences of allowing "scabs" to work for them, and hire them only with reluctance, and under the pressure of necessity. That there should be so many men who, under these circumstances, still refuse to surrender their independence to the Debses and Sovereigns is a credit to the American race; but they should no longer be compelled to keep up the struggle with all the odds against them. It does not take a long acquaintance with workingmen to convince an impartial observer that the emancipation of the "scabs" is the most important social problem now before the world, and that the continued existence of free government depends upon its solution.

CURIOUS case of an architect's responsibility came up lately in Philadelphia. It seems that a recent statute of Pennsylvania provides that, after a building in process of erection shall have reached the third story, all floors above shall be covered with rough boards, to protect the workmen from falling. Mr. Free was the architect of an apartmenthouse, which was built to the sixth story without any boards having been laid on the floor-beams. The building inspector, noticing this, reminded Free of the law, but Free, as he afterwards testified, thought that he did not intend to insist upon the boarding, and did not direct the contractors to lay it. week or two ago, two men were at work on a scaffolding in the sixth story, when the scaffolding gave way. There was an elevator-shaft near, and the men fell into it, and so to the ground, and were killed. At the inquest, the fact that Free knew the law, but did not do his part toward complying with it, was admitted, and the jury brought in a verdict holding him responsible for the death of the two men. An indemnity company, which had issued an accident-insurance policy on the building, was represented at the inquest, and claimed that, as the men fell down the elevator-shaft, and not through the floor, the law did not apply; but the coroner ruled that, as the shaft was not in use for hoisting, the law required that it should be covered like the rest of the floor.

MAT great inventor, Mr. Keely, seems to have a dangerous rival in the West, in the person of an individual who, as we are informed, has discovered the art of producing rain at will; or, at least, whenever he tries, he succeeds. The means by which this result is accomplished are, as usual in such cases, "extremely simple." All that is necessary is to mix certain substances, which produce a gas. A charge of this gas, measuring in volume about fifteen hundred cubic feet, is set free, and ascends, we are told, to a suitable height, where it suddenly collapses. The surrounding atmosphere rushes into the vacuum thus formed, producing the conditions necessary for rain, which, as is well known, is caused by masses of air hitting against each other. Notwithstanding the small quantity of gas employed, fifteen hundred cubic feet being only as much as would fill a room of extremely moderate size, the effect of the crash is felt for twenty miles in all directions, and a rain-fall follows, which, as the newspapers assure us, varies from half an inch to six inches. We hardly know whether to admire most the amiability or the energy of this extraordinary substance. A gas which, in defiance of all the laws of diffusion, would keep itself together until it had ascended to a certain distance, and then, in defiance of all the other laws regulating the conduct of gases, would suddenly collapse, merely for the sake of producing such beneficent results for its inventor and his clients, must possess a moral vigor only surpassed by the physical activity requisite to enable about fifty pounds of it, simply by "collapsing," to cause the precipitation of more than four hundred million tons of water, in the form of rain, over a territory of twenty miles radius. It ought, perhaps, to be mentioned that a necessary ingredient of this excellent gas is an "alloy," called "murium," the components of which appear to be known only to the inventor. It seems a little queer to make gas with an "alloy," but, obviously, ordinary analogies fail in reasoning about so peculiar a substance. Meanwhile, the demand for it appears to be increasing. A contract, we are told, has been made with a "foundry," for supplying ingredients for the gas, the "murium," presumably, being the principal one derived from this source; and the Chicago, Rock Island and Pacific Railroad is said to have fitted up a rain-making train, and to be at present spending about four hundred dollars a week in sending charges of collapsible gas into the air along its route. These experiments, particularly, we should think would excite much interest among the stockholders of the railroad company. The spirit of scientific investigation is rare among railway officials, and when one of them is enthusiastic enough to spend twenty thousand dollars a year of the stockholders' money in buying "murium," his ardor for learning deserves to be noted.

HAT the Germans call "the highest and most beautiful church-tower on earth," the tower of Ulm Cathedral, has lately been completed. Every architect knows something of the bold and rich design of this "tower of towers," as Lübke calls it. Within a few years, a large sum of money has been raised to complete it. In May, 1890, the cap-stone was placed

on the spire, and the various staircases, rooms, galleries and balustrades are now finished, and open to the public. The summit of the spire is sixteen feet higher than the towers of Cologne, so that the people of Ulm have reason to glory in their achievement. The ascent of the tower is made particularly easy, and will probably attract many visitors. Three hundred and eighty-nine steps lead from the church floor to the platform where the plan of the tower changes from square to octagon. Here, in the octagonal base of the spire, are four handsome rooms, panelled with oak, one of which serves as a store-room, while the others form the habitation of the "Thurm-wächter," or "tower watchmen," who certainly have a romantic dwelling. One hundred and sixty-seven steps more lead to "the octagon platform." from which a fine view is obtained, the floor being about three hundred and fifty feet above the ground. This "octagon platform" constitutes a beautiful octagonal room, of immense height, the ceiling being almost lost in the upper construction of the spire. Through the middle of it rises a stone cylinder, supported on eight open arches. This cylinder forms a sort of spinal column for the upper part of the spire, with which it is connected by ornamental arches at various heights. Inside is a spiral staircase. To reach the staircase, a flight of nineteen steps conducts from the floor of the "octagon platform," and one hundred and eighty-six more ascend to the "wreath," an open balcony, encircling the spire, four hundred and fifty feet from the ground. This is the highest point intended to be readily accessible, and is well guarded by stone balustrades. From it can be seen the city, laid out like a map, the view extending to the German Alps.

EFFERÉ has, in Le Génie Civil, an interesting and valuable study of the various modes of traction now in use, particularly for tramways. The idea, which still prevails extensively, that, some day, carriages will be drawn by steam or electricity over ordinary roads, he dismisses at once, saying that experience has shown that a light carriage cannot be propelled over an ordinary road with a motor of less than three or four horse-power; and that, even if such motors could be economically used, their employment would lead to numerous accidents, which, under present conditions, are avoided much more through the intelligence of the horses used to draw carriages than of the drivers who direct them. the traffic is sufficient to warrant laying rails, the case is quite different, and here mechanical traction is both economical and The cable system seems to be unknown abroad, and he confines himself to traction by steam or electricity. The latter is, naturally, best suited to tramways, and, of the three modes of applying the force to the wheels, namely, by transmission from a central plant by overhead wires, transmission in subterranean conduits, or through the rails, and the equipment of the cars with independent accumulators, he thinks that the last is likely to become the most advantageous. He says, incorrectly, that the street-cars in New York are propelled by means of overhead wires and trolleys; but, as these appliances for transmission of force are used in hundreds of other cities in the United States, his conclusions are not far wrong. In addition to the American cities, Berlin has adopted the trolley-system, and it is proposed to use it on the new line from Vienna to Buda-Pest. Ugly though the posts and trolley-wires are, he thinks that they furnish the simplest and most economical, and consequently, the most desirable mode of transmitting force for such purposes yet in use. Transmission through underground conduits he regards as very costly to establish, and very difficult to keep in order, and says that it does not seem to have been successfully tried anywhere except in Buda-Pest. Whether accumulators will replace for tramway cars direct transmission, he acknowledges to be a question of improving the accumulators; but this improvement is constantly going on. Already, the City of Liège is preparing to establish an accumulator system, and, when accumulators can be made light, powerful. easily kept in order and not liable to deterioration, they will be rapidly adopted. For the great railroads, however, he doubts whether any electrical devices will supersede steam. The use of trolley-wires, or track transmission, he declares to be utterly incompatible with the shifting of cars, and making-up and distribution of trains, essential to railway operations. It is possible that, later, immense accumulators may take the place of locomotives, but at present, even with the best and lightest accumulators there would be no saving in weight over the locomotive and tender, and the chances of accident and derangement would be far greater.

THEATRES.1 - IV.

ROTTERDAM THEATRE, HOLLAND.



IIE subject of this paper is one of the characteristic Continental play-houses, built upon a large open site and planned under most favorable conditions. Holland is adding in this decade two fine new theatres to the list of important opera-houses,—Mr. Springer's new Municipal Theatre at Amsterdam, I hope to be able

to describe later.

The Rotterdam Theatre was begun in 1884 and finished in 1887, being built from the designs of Mr. T. Verheul, by whose kindness, through the intervention of Mr. Edwin O. Sachs, I am enabled to reproduce the annexed illustrations. The foundation-stone was laid on May 3, 1884, and the opening was celebrated on the fif-teenth of September, 1887.

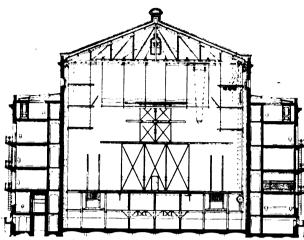
The peculiarity of this theatre is, that it was built for two distinct purposes with two separate managements, one for the performance of the German opera, the other for the production of national plays.

A covered carriage-porch in the front leads to the spacious vestibule, which is twenty-nine feet six inches wide, by forty-six feet long, and built of colored stone. There are also side entrances for the pedestrians, so that they can obtain admission without crossing the line of the carriage route; this is a great advantage, as it prevents accident

and obviates the inconvenience of foot-passengers dodging about among the moving cabs and carriages.

In the vestibule are two ticket box-offices, one for booking seats for the Dutch plays, and one for the German operas. Notices are posted up, directing the audience to the "right" and to the "left";

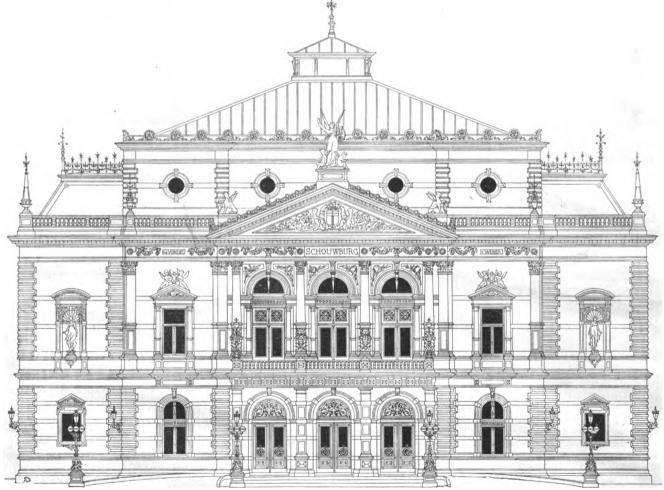
part of the other, a system which has frequently been advocated, as it increases the safety of the audience; for wherever there is an entrance on the right there is a corresponding exit on the left, and so if one has a seat remote from and on the opposite side from that by which one has entered, the mind is put at ease by the knowledge that the farther you are away from the door you entered by on the right, the



nearer you are to the exit door on the left. Symmetrical planning

should always be followed in theatre designing.

From the vestibule three wide openings lead to the inner vestibule and the grand staircase, which, like everything else in the Rotterdam Theatre, is in duplicate. This staircase leads to the first tier, while three doors opposite the above-mentioned openings lead to the ample corridor behind the ground-floor seats, which are arranged as stalls, with a ring of small private boxes encircling them.



the house is thus divided, as it were, into two halves, and all the seats which have uneven numbers are approached from the right of the vestibule, while the even numbers go to the left. This system appears to be an excellent one; it is a good guide to the public and to a great degree obviates the difficulty so often experienced in find-ing one's seat in a theatre.

The plan of the theatre is symmetrical, one side being a counter-

¹ Continued from No. 964, page 120.

grand feature in this theatre is the wide and spacious corridor A grand feature in this theatre is the wide and spacious corridor which surrounds each tier of the seating; there is room in each of these corridors to contain the whole number of the people seated on the tier without undue crushing, and from each corridor two or more separate exits lead to the open air. In addition to the wide exits afforded by the doors leading to the entrance vestibule, there are other exits from the stalls' corridor, the one on the right, the other on the left. The theatre is divided on the auditorium side of the curtain into stalls and boxes on the ground floor; two rows of stalls and boxes behind them on the first tier; seats with boxes in the central portion of the circle on the second tier, and amphithea-

tre and gallery above

On either side of the house will be seen the wide staircases which lead to the second tier, and when it is observed that comparatively few people are seated in this tier, the width of these staircases will be considered most liberal. These staircases communicate with be considered most liberal. These staircases communicate with the front tier and stalls' level and afford means of exit therefrom. The grand staircases, it will be seen, does not continue up to the second-tier level. The amphitheatre and gallery have their separate staircases to the right and left.

The foyer is situated over the vestibule on the Grand-Tier level, and is divided into three rooms, having a total superficial area of two hundred and twenty square metres. There is a small refresh-ment bar in the foyer and an open balcony over the carriage-porch is approached by three windows. There are two large cloak-rooms, one on either side of the bar, which are entered from the corridor. Smoking is not permitted in the foyer, but a separate room is provided for that purpose.

The lavatory accommodation seems somewhat cramped and poor, considering the luxurious scale upon which everything else is

This is their entrance and also their nine like rats out of a hole. exit in the majority of cases. Should a fire break out, they must not move from their seats, but play confidence into the fainting hearts of the public. As a fire usually originates on the stage, and the stage floor is of wood, it would not take long before their only exit under the stage through the mezzanine is cut off. "But surely they can find a way out over the orchestra-rail into the auditorium," I fancy I hear argued. Do not forget this, dear reader, that where there is a panic the exits and staircases of the auditorium, however wide, are soon blocked up with a mass of struggling people and escape that way for the musicians is reduced to a mere chance.

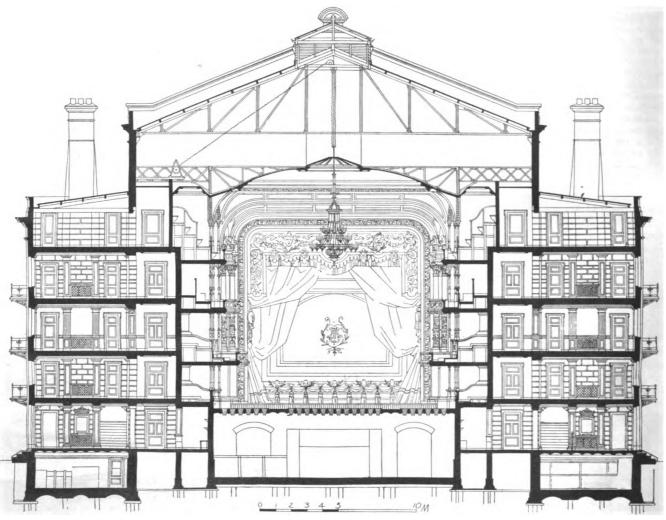
Now the architect of the Rotterdam Theatre has been mindful

of his musicians; he has considered their lives worth looking after and has provided them with two direct exits from the orchestra into the streets, without their having to dive into the flaming stage or

panic-stricken audience.

The basement plan shows us the arrangement made for the police officers in charge, the gas-meter rooms and the heating-chamber under the stalls.

So much for a hasty ramble through the front of the house: now let us view the part behind the curtain.



The Rotterdam Theatre: Transverse Section.

planned. The stage boxes form a special feature; they are entered, on each tier, through a separate lobby, and behind them is the spacious saloon or retiring-room.

In the orchestra, the music-desks are fixtures and on the basement plan it will be found that there are two separate entrances to the orchestra, one on each side, with direct exits under the stage-boxes leading to the open air. In connection with the orchestra entrances are tuning-rooms and music-rooms for the members of the band under the stalls' corridor, the only drawback to which would appear to be that they have no windows by which to obtain direct light or

Just a word, before passing on to further consideration of these plans, as to the exits provided for the musicians. Here is an example which should be followed by all theatre designers: the poor musicians are seldom, if ever, considered from this point-of-view, their safety seeming to be a matter of little moment, although often through their prompt action in striking up a popular tune a panic has been averted, when some slight fire or accident has created a movement among the audience. The fate of the band is usually this: to obtain admission to the orchestra they have to crawl through a constantly slamming door under the stage, creeping out of the mezza

The stage is of ample proportions, the width between the main walls being more than twice the width of the proscenium-opening, thus allowing for the scenes to be taken off right and left out of sight of the audience, with plenty of room for "shifting" and "setting." The scene-dock, or store, is in the rear and is seen by the section given through the stage, cut off by sliding iron doors.

Still working on the symmetrical system, as in the auditorium, there are two entrances to the stage and dressing-rooms. On the right, on the ground level, are the care-takers' apartments, on the left the stage-engineer's offices, the fire-watch, and stage administrative

The dressing-room blocks on either side of the stage are separated from the stage by solid walls and a corridor. This is a most excellent provision for safety, as also are the external balconies placed outside the dressing-room windows, thus affording, in addition to the two staircases provided for the actors and actresses, a means of es-

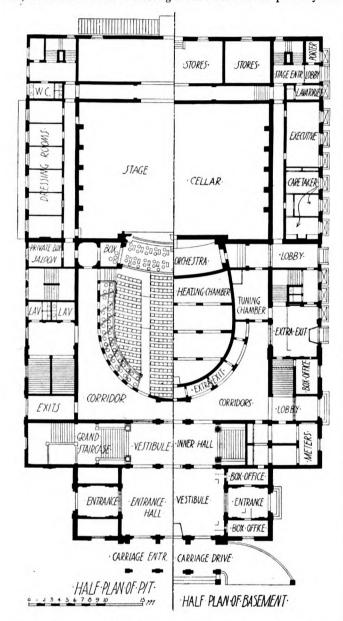
Two libraries are placed on the first tier, one for the comedies and one for the operas. There are green-rooms, one on either side of the stage, and the dressing-rooms for the soloists are specially designed. All the doors leading from the dressing-rooms and auditorium to

the stage are of iron and made to close of themselves; there is a firecurtain to the proscenium-opening which can be let down by one man in three-quarters of a minute and in case of need it can be lowered from the street. There are electric alarm-bells fitted throughout the theatre and eighty-two safety-lamps are nightly lighted in the passages and staircases.

The theatre is lighted by gas, thirty-four chandeliers being used, and provision is made for turning off the gas from a point in the street. The system of heating is by hot-water pipes and the ventilation, which allows for the driving out of the vitiated air, is worked by a

gas-motor.

The length of the building is 236 feet 3 inches, and the width 128 feet, and the time taken in erecting it was three and one-quarter years.



The following are a few of the leading dimensions of the building:

Back wall of stalls' corridor to curtain line	82	feet.		
Width between main walls of auditorium				
Wall back of boxes to curtain line	72	"	6 inch	es.
Width between walls, back of boxes	64			
Width between main walls of stage	83			
Back wall of stage to curtain line	56	• • •		
Curtain line to line of grand tier box front	59	64		
Curtain line to line of second tier box front	62	4.6		
Height of stage floor to gridiron	58	"		
Height of proscenium-opening	38	"		
Width of proscenium-opening	36	4.6		

E. A. E. WOODROW. [To be continued.]

THE ITALIAN RENAISSANCE.1-VI.

HINTS TO TRAVELLING STUDENTS: THE PALACES OF FLORENCE. — FIFTEENTH CENTURY.

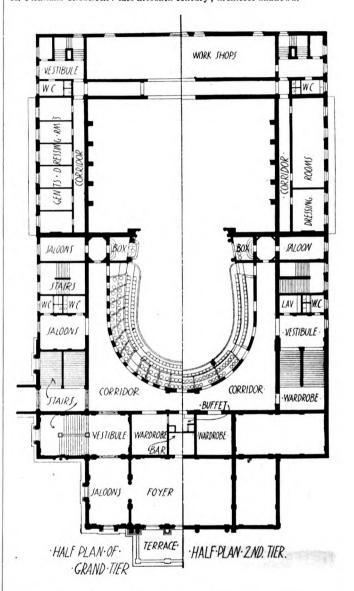
- PALAZZO RICCARDI: 1430, by Michelozzo Michelozzi, for the Medici; purchased by the Ricardi in 1659, it was by them enlarged in 1714.
 PALAZZO PITTI: 1435, by Brunellesco; the garden façade by B. Ammanati in 1568; the low lateral wings in front added 1620-1631.
 PALAZZO QUARATESI: about 1440 by Brunellesco, for Andrea Pazzi; completed by Jiacopo Brunellesco.

Continued from No. 967, page 9.

- 4. PALAZZO RUCELLAI: 1460. from design by L. B. Alberti: built by B.

Rosselini.
PALAZZO GIUGNO CANIGIANI: about 1460, garden façade of fifteenth century; portal and court by Ammanati, about 1570.
PALAZZO CASA MURATA: about 1460.
PALAZZO CORSI (formerly TORNABUONI): about same period, by Michelozzi: remodelled in 1810.
VILLA MOZZI: about same period, by the same; considerably altered later.

NILLA MOZZI: ADOUT SAME PETIOD, by the same; considerably altered later.
 PALAZZO VECCHIO: a mediæval palace much altered during the Renaissance. OUTER COURT by Michelozzo, in 1464; door to Sala dell' Udienza, 1499, by Benedetto da Majano; Sala del Cinque-cento, 1495, by Fronaca; court enriched with plaster relief-decoration, 1585, by Marco da Faenza; many other alterations in subsequent periods.
 PALAZZO STROZZI: 1489, by B. da Majano; court-yard and cornice by Cronaca.
 PALAZZO GINGRI: 1490? by Baccio d'Agnoto.
 PALAZZO GINGRI: about 1495, by the same.
 PALAZZO MAGNANI: late fifteenth century; architect unknown.
 PALAZZO CEPERELLO: late fifteenth century; architect unknown.
 PALAZZO INCONTRI: late fifteenth century; architect unknown.



- PALAZZO CORSINI: an early Renaissance palace rebuilt, with fine staircase, in 1656, by Silvani and Ferri.
 PALAZZO GUADAGNI (or DUFOUR-BERTE): end of fifteenth century, by Baccio d'Agnolo; with interior decorations, woodwork, etc, attributed to Bramante.

SIXTEENTH CENTURY.

SIXTEENTH CENTURY.

19. PALAZZO SERRISTORI (COCCHI): about 1500-1510, by Baccio d'Agnolo.
20. PALAZZO BORGHERINI (DEL TURCO); about 1500, by an unknown architect.
21. PALAZZO GUADAGNI: about 1505 (?) by C. onaca.
22. PALAZZO GUADAGNI: about 1505 (?) by C. onaca.
23. HALL OF THE SERVI DI SANTA MARIA: 1519, by Antonio da San Gallo, after a design by Brunellesco.
24. PALAZZO ORSINI (formerly STIOZZI RIDOLFI): by Baccio d'Agnolo.
25. PALAZZO PANDOLFINI: designed by Raphuel, and begun about 1518, executed and completed by Giocanni da San Gallo.
26. PALAZZO BARTOLINI (SALIMBERI): 1520, by Baccio d'Agnolo.
27. MERCATO NUOVO: 1547, by Bernardo Tasso.
28. PALAZZO BUTCINI: by Marco di Zanobi Fulfi, 1550; (formerly attributed to Raphael.).
29. PALAZZO BUTCIRIN: by Domenico d'Agnolo (second son of Baccio d'Agnolo,) about 1550?
30. PALAZZO GIUGNI: 1560, by Bartolommeo Ammanati.
31. PALAZZO LARDEREL: Giovanni Antonio Dosio.
32. UFFIZI PALACE: begun 1560, by Giorgio Vasari; continued and completed by Parigi, Buontalenti and others.
(PALAZZO VECCHIO: embellishment of Court-arcade with plaster-relief arabesques; 1565, by Marco da Faenza; see 9.)
33. PALAZZO GIUGNO CANIGIANI: portal and court by Bartolommeo Ammanati, 1570; see 5.)



PALAZZO ALTOVITI: 1570.
 PALAZZO MONTALVO: by Bartolommeo Ammanati.
 LOGGIA DEL PESCE in the Mercato Vecchio: by Giorgio Vasari.
 CASINO DI LIVIA: by Buontalenti, about 1570.
 CASINO MEDICEO: 1570.
 PALAZZO RAMIREZ: about 1580, by Bartolommeo Ammanati.
 PALAZZO VITALI: by the same; late sixteenth century.
 PALAZZO "NONFINITO": 1592, by Buontalenti for Alessandro Strozzi; Court-yard by Luigi Cigoti; palace never completed.

SEVENTEENTH AND EIGHTEENTH CENTURIES.

VILLA POGGIO IMPERIALE: 1622. *
 (Front wings of PITTI PALACE: 1620-1631; see 2.)
 (PALAZZO CORSINI: remodelled and staircase built 1656, by Silvani and Ferri; see 17.)
 PALAZZO PANCIATICHI: 1700, by Carlo Fontona.
 (PALAZZO RICCARDI: enlarged 1714: see 1.)

MINOR ARCHITECTURAL WORKS. - TOMBS, ALTARS, DOORWAYS, CHURCH FURNITURE, ETC.

(This list does not pretend to approach completeness. It aims merely to gather together into an approximately correct chronological sequence the principal examples of minor architectural works mentioned in the hand-books. The richness of Florentine art in monuments, pulpits, terra-cotta embellishments, wood-carving, intarsiatura and metal work has already been referred to. This list, short as it is, will help to an appreciation of the activity of Tuscan artists in these minor works.)

FIFTEENTH CENTURY.

 THE "MANDOLA" DOOR: south side of Duomo, adorned in 1408 with early Renaissance or semi-classic foliage by Giovanni d'Ambrogio and Niccolo di Piero Lomberti.
2. Northern Doors to Baptistery (San Giovanni): 1403-1424, by Lorenzo

- 2. NORTHER BOOKS TO BATTISTERY (San Glovanni; 1400-141, by Located Ghiberti.
 3. TOMB OF POPE JOHN XXIII in San Giovanni: 1420, by Donatello and Michelozzo Michelozzo.
 4. EASTERN DOORS TO BAPTISTERY: 1425-1452, by Lorenzo Ghiberti.
 5. TERRA-COTTA DECORATIONS IN PAZZI CHAPEL: 1425, by Luca della Robbia.

- Robbia.
 LAVABO IN SACRISTY, Santa Maria Novella: by Luca della Robbia.
 PULPITS OF BRONZE, in south aisle of San Lorenzo: by Donatello and Bertoldo (his pupil).
 TOMB OF CARDINAL GIACOPO OF PORTUGAL, in San Miniato: 1427, by Antonio Rossellino.
- TOMB OF CARDINAL GIACOPO OF PORTUGAL, in San Miniato: 1427, by Antonio Rossellino.
 RELIGUARY OF SAN ZENOBIO under altar in the tribune of Duomo: 1440, by Ghib-rti.
 ORGAN SCREEN in San Lorenzo: by Donatello and Bertoldo.
 STUCCO DECORATIONS Of Old Sacristy, San Lorenzo: by Donatello.
 ORGAN-LOFT from Duomo, now in the "Opera del Duomo:" the figures (and other decorations?) 1433-1140, by Luca della Robbia and Donatello.
 DOOR TO NEW SACRISTY of Duomo: 1446-1467, by Luca della Robbia, Maso di Bartolommeo and Michelozzi.
 PULPIT in left aisle of Santa Maria Novella: by Maestro Lazaro from design by Brunellesco.
 TOMB OF LEONARDO BRUNI (ARETINO), in Santa Croce: 1450, by Bernardo Rossellino.
 TOMB OF THE BEATA VILLANA in Santa Maria Novella: 1451, by Bernardo Rossellino.

- TOMB OF BRUNELISSCO III DIOBIO. 1. 130-140., by Baggland.
 TOMB OF THE BEATA VILLANA in Santa Maria Novella: 1451, by Bernardo Rossellino.
 SEPULCHRAL SLABS OF THE ACCIAJUOLI in the Certosa of the Val d'Ema; about 1450, by Donatello: carved decoration on that of the Bishop of Ostia, by Giuliano da San Gallo.
 TOMB OF GIANNOZZO MANETTI in Duomo: about 1460, by Donatello.
 MARSUPPINI TOMB in Santa Croce: 1460-1470, by Desiderio da Settignano.
 ALTAR in San Ambrogio: 1162, by Mino da Fiesole.
 TOMB OF THE SALUTATI in the Cathedral at Fiesole: 1462, by Mino da Fiesole.
 TOMB OF THE SALUTATI in the Cathedral at Fiesole: 1462, by Mino da Fiesole.
 TOMB OF BERNARDO GIUGNI in the Badia: by Mino da Fiesole.
 TOMB OF THE MARGRAVE HUGO in the Badia: about 1481, by Mino da Fiesole.
 CABINETS AND DOORS in intarsiatura, Sacristy of Santa Croce.
 TOMB OF PIERO DI MEDICI in old Sacristy of Santa Croce.
 TOMB OF PIERO DI MEDICI in old Sacristy of Santa Croce.
 FOUNTAIN IN COURT of Palazzo Veochio: by Andrea Verroschio.
 FOUNTAIN IN COURT of Palazzo Veochio: by Andrea Verroschio.

- CABINETS AND DOORS in intarsiatura, Sacristy of Santa Croce.
 TOMB OF PIERO DI MEDICI in old Sacristy of Santa Lorenzo: by Andrea Verrocchio.
 FOUNTAIN IN COURT of Palazzo Vecchio: by Andrea Verrocchio.
 TOMB OF FRANCESCO SASSETTI AND WIFE in Santa Trinità: by Giuliano da San Gallo.
 MARBLE TABERNACLE in San Lorenzo: by Desiderio da Settignano.
 TOMB OF FILIPPO STROZZI in Strozzi Chapel of Santa Maria Novella: by Benedetto da Majano.
 ALTAR in the Badia: by Benedetto da Majano.
 DOOR TO SALA D'UDIENZA in Palazzo Vecchio: 1490 (?) by Benedetto da Majano.
 MARBLE PULPIT in Santa Croce: 1493, by Benedetto da Majano.
 MARBLE PULPIT in Santa Croce: 1493, by Benedetto da Majano.
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 MORBLE PULPIT in Santa Croce: 1493, by Benedetto da Majano.
 MORBLE PULPIT in Santa Croce: 1490 (?) by Benedetto da Rovezzano.
 TOMB OF BISHOP BUONAFIDE in chapter-house of the Certosa in the Val d'Ema: by Giuliano da San Gallo.
 SHRINE IN SANTA Trinita: by Benedetto da Rovezzano.
 SIXTEENTH CENTURY

SIXTEENTH CENTURY.

- 41. TOMB OF THE ALBERTI In Santa Croce: by Bartolini.
 42. TOMB OF PIETRO SODERINI in Santa Maria del Carmine: 1513, by Benedetto TOMB OF THE ALBERTI IN SANTA CIOCE: DY BAPICIOIN.
 TOMB OF PETRO SODERINI in SANTA Maria del Carmine: 1513, by Benedetto da Roreszano.
 TOMB OF AMERIGO VESPUCCI in San Salvatore d' Ognissanti.
 TOMBS OF GIULIANO AND LORENZO DI MEDICI in the new Sacristy of San Lorenzo: 1529-1534, by Michael Angelo.
 MARBIE CHOIR-SCREEN in Duomo: by Baccio d'Agnolo; reliefs executed in 1555, by another band.
 DOOR TO SAN APPOLONIA: 1540 (2) by Michael Angelo.
 TOMB OF ANGELO MARZI-MEDICI in SS. Annunziata: 1546, by Francesco da San Gallo.
 TOMB OF PAOLO GIOVIO in cloister of San Lorenzo: 1555, by one of the San Galli.
 TOMB OF MICHAEL ANGELO in Santa Croce: 1570, by Giorgio Vasari, 50. TOMB OF BINDO ALTOVITI in SS. Apostoli: 1570, by Bartolommeo Ammanati.
 TOMB OF GIOVANNI BATT. RICASOLI in Santa Maria Novella: 1580 (2) by Taddeo da Fiesole.
 CHOIR-STALLS IN CERTOSA in the Val d'Ema: 1590.

SEVENTEENTH CENTURY.

53. HIGH ALTAR in choir of San Spirito: 1600, by Caccini.
54. TOMB OF GIOVANNI DA BOLOGNA in SS. Annunziata: 1610, by Francavilla.
55. TOMB OF ANDREA CORSINI, in north transept of Santa Maria del Carmine: 1675, by Faggini.

For the eighteenth and nineteenth centuries it has not seemed necessary to prepare any list. After the glorious work of the quattro-cento and cinque-cento, the two or three works of Canova and other very modern masters in Florence seem cold, artificial and heavy. Nor has stained-glass been mentioned, nor the hundreds of moveable objects—crucifixes, cups, and the like—which illustrate

the perfection of early Renaissance industrial art in Tuscany. But it may be briefly said that in the Duomo, in Santa Maria Novella, in Santa Croce and the old Sacristy of San Lorenzo, there is more good stained-glass of the fifteenth and early sixteenth century, by Ghiberti, Giovanni da Udine and o hers, than can be found in any other Italian city. Unfortunately, much of it has been "restored" very recently.

A. D. F. HAMLIN.

[To be continued.]



OF SHERIDAN. - POPULAR CRITICISM. - A STEEL SKELETON BUILDING STRUCK BY LIGHTNING. - STEEL GRAIN ELEVATORS.

OME time ago there was described in these letters the great drainage canal by which Chicago's sewerage should be turned from the Lake, from which the supply of drinking water is taken, westward through the river and artificial canals, to the watertaken, westward through the river and artificial canals, to the waterways of the Mississippi valley, being made harmless principally by aeration. That this is a wise plan seems to many decidedly questionable. That the contents of the proposed canal, which runs through many of the inland towns, will be entirely harmless, time will more certainly prove than anything else. But the whole plan is most strongly tinetured with that spirit of lavishness and waste which in our nineteenth century is so noticeable in America, and especially in the West. Every one knows that in this apparently most useless of all material, the drainage of a great city, there lies that which, if properly handled, means an almost vast fortune to the individual, or a decided source of income to the city itself. The system of drainage at the Fair, described in these letters, was most admirable; most of the European cities dispose of their refuse with admirable; most of the European cities dispose of their refuse with some such similar hygienic treatment, and it does seem a pity that Chicago, at such great expense to herself and the State, should turn an actual good into a very possible evil. However, in spite of all opposition, the plan is being carried out and work on the excavations has been pushed forward for the last few years, only interrupted by an occasional strike on the part of the men, or lack of harmony among the commissioners occasioned by political difference of opinions.

The excavations are progressing; the district having been divided into sections, the work is carried forward simultaneously on nearly all of them. The first portion for nearly twenty miles is excavated principally through earths and clavs, but in the vicinity of Lemont limestone formation is struck, and here lies the hardest work. all points of the construction the most varied methods of excavating the different materials are shown in active operation. At the north end of the canal, which is one hundred and sixty-five feet wide by thirty deep, great steam shovels and excavators carrying the earth to great piles sixty feet high, are in competition with the old reliable and wheelbarrow, manipulated by sons of Erin and Italy. Farther south, where the limestone is touched, the steam-drill works like the very impersonation of frenzied energy, great blasts are fired, and the débris is carried off in cable cars, or in huge, elevated, movable cantilever constructions that unload the stone into great piles far away from the excavations. At this point the magnitude of the work becomes apparent, and one cannot fail to be impressed with that, as well as by the enormous outlay necessitated by the undertaking. At the same time, the perfection of the mechanical means employed is so remarkable, the part of the country at this point so unusual, that one becomes enthusiastic over the engineering part at least, even if the practical utility of the scheme is not so apparent.

Apropros of the drainage-canal, a scheme is being agitated by the city fathers which again involves the question of the Lake Front, and which, if carried out, would effectually put a stop to all future plans for using this much appropriated tract of land as a possible site for all large buildings of a public or semi-public character to be erected in Chicago for the next twenty years. It has been decided by all the courts of the country that the city now has the exclusive right to this portion of land stretching from Randolph Street to Park Row, a distance of about three-quarters of a mile. The highest courts, as well as the Secretary of War have also decided that the city possesses the absolute right to twelve hundred and fifty feet from the present shore line, extending out into the water, leaving two hundred and fifty feet of harbor over which there can extend no municipal authority. The plan would be to utilize the material now being taken from the canal to fill-in the to the two-hundred-and-fifty-foot limit, forming a fine extra addition to the present stretch of land, and still leaving as ample anchorage for vessels as is found at any point on the Lake. Some system of terraces would be used and a tunnel formed for the Illinois Central tracks, which would be relieved every few hundred feet by ventilating shafts. These would be the only indication that the tracks were practically in their old locality. In this way an

effective park would be formed in the heart of the city, a very unsightly portion of land would be transformed into an available pleasure-ground, and the smoke and soot from the Illinois Central engines would be materially diminished, so, at least at that part of the Front between Madison Street and Park Row, the harbor would come out into clear view. At present the material from the excavations being made in the West Branch of the Chicago River, a distance of three miles to the limits, the excavation being one hundred and sixty-five feet wide by thirty deep, is being loaded onto scows and dumped into the Lake, where it is, of course, wasted. to scows and dumped into the Lake, where it is, of course, wasted. The chief drawback to the whole scheme is the enormous expense which it would entail on the city. The estimates are, of course, not made, but the roughest of guesses would bring the sum up among the millions of dollars. Those of sanguine temperament advance the idea that the Illinois Central would do a great deal of the work of sinking its tracks, but there are others who maintain that this is not the case. The alderman, whose pet scheme this is, offered the following resolutions at a recent council meeting:

Whereas, It has long been the desire of the citizens of Chicago to know what use is to be made of the Lake Front from Randolph Street to Park Row, and Whereas, It appears from the late decision of the United States Supreme Court that the unquestioned title is in the City of Chicago,

and

Whereas, It is desirable that it be put to some use, and

Whereas, The Drainage Trustees have let contracts for the eastern
section of the drainage-canal, the terms of which provide for the
removal of the earth excavated from the line of said canal, and

Whereas, Such contractors are now towing all the material to a point
in Lake Michigan, where a depth of fifty feet of water can be found,

Whereas, It is desirable that the space east of the Illinois Central right-of-way to a point two hundred and fifty feet west of the Government breakwater be utilized for a people's park, and Whereas, there is no doubt but that the drainage-canal contractors

Whereas, there is no doubt but that the drainage-canal contractors would be glad to dump the earth excavated from the canal in this space without cost to the city: therefore, be it

Ordered, That the Mayor and Commissioner of Public Works be, and they are hereby requested to enter into negotiations, first, with the Illinois Central Railroad Company, for the lowering of their tracks from their present grade so that the present Lake Front can be carried over them; second, with the proper Government officials, with a view of securing permission to extend the park twelve hundred and fifty feet east of the Illinois Central Railway; and third, with the Drainage Canal contractors with a view of having them fill the space indicated without cost to the City of Chicago. without cost to the City of Chicago.

These resolutions have been passed and should the scheme be carried out, a more beautiful water front might be obtained than

many cities are able to boast of in their very heart.

The Columbus Museum has been formally opened, and the name The Columbus Museum has been formally opened, and the name promptly changed to the Field Museum. It has been the recipient of much that is good from the World's Fair, but also of a great deal of useless material which will, later on, doubtlessly be weeded out. One collection was burned, when it was stored near the Park before it reached the museum, which, doubtlessly, might be looked upon in the light of a blessing. Many interesting collections have been given from the Anthropological Building, the lion's share of whose contents seems to be in the Museum at present. In the central rotunda of the place are many of the smaller models of all the World's Fair sculpture. This is naturally a most interesting collection and one which, not only from association, but from its artistic value is well worth seeing. It seems like a page from the history of sculpture in America. It is already being felt that the Museum is far too inaccessible, and that in its present locality at history of sculpture in America. It is already being resembled museum is far too inaccessible, and that in its present locality at Jackson Park, there will be very few of Chicago's citizens who will be very few of Chicago's citizens who will be its fullest extent. except on Sundays. The be able to enjoy it to its fullest extent, except on Sundays. The papers are already making facetious remarks about the desirability of adding sleeping-coaches and dining-cars to the trains running down to the place. Before much money is expended on the final work of the building in making it a permanent structure, a good deal of consideration ought to be given to the advisability of keeping it where it is at present. Of course, nowhere could a site be chosen, which would afford such beautiful surroundings, and though another building built for the special purpose might well be more convenient and better suited to its use, it is doubtful whether the element of beauty would so enter into its composition as it does into element of beauty would so enter into its composition as it does into the present one, the old Art Palace.

Frequenters of the Art Building last summer may remember the Peace," an Indian on horse-back, holding aloft a spear on which is a feather. It is a good thing, and when seen at the Fair by Judge See, he determined that it should not leave Chicago, and he consequently bought it and offered it as a gift to Lincoln Park. It has recently been unveiled there, being placed not very far from the Grant Monument. It is the work of Cyrus Edwin Dallin, a young artist born in the new Western State of Utah. Displaying marked artistic ability while yet a boy, it was made possible for him to go to Boston to study, and from there his education led him to Paris. This is Mr. Dallin's first public work, and in a speech which he made at the unveiling he told how its subject is one of especial interest to him. He said: "The statue that stands before you represents not only a picturesque subject, but it is a record of some vivid boyish impressions.

"There had been an Indian outbreak and after the soldiers had been sent to quell it the Indians came to sue for peace. The soldiers were encamped on the edge of the little village in which I was born, and I well remember how, one day, fully two hundred mounted braves, streaked with war paint and gorgeous with feathers, came to smoke the peace-pipe. These grim warriors who seemed wedded to their horses profoundly impressed me, and I have always looked

upon the Indian with fascinated interest.
"Consequently, when Buffalo Bill was in Paris in 1889, I embraced the opportunity for studying the Indian and spent six months making sketches from life for this statue."

Some months ago, a competition was spoken of as about to occur for an equestrian statue of General Sheridan, to be placed in Garfield Park. This competition was especially noticed because of the unusual way in which it was conducted, the jury being composed of sculptors and men whose judgment was of special value. It was in this contest that Mr. Dallin was the successful competitor.

It has been mentioned heretofore in these letters, how, as a general thing, the local press accepted all works of art, so-called or otherwise, presented to the city, without an honest word of criticism. A very funny collection of communications has been published by one of the local papers as to how to make our city beautiful. These communications have not been made by people because they are in any way especially fitted to make them, and do not come as criticisms from the paper itself, but the first subject which is attacked is this very one of the city's statues. They are piteously assailed, and into a proposed melting-pot has gone much of the work that is positively bad, while some occasional bit of good work has inadvertently slipped in, too. The architecture of the city is assailed with equal slipped in, too. The architecture of the city is assailed with equal energy and lack of discrimination. One man wishes us to abandon "gloomy brick and stone" and embody all architectural flights in Portland cement for exterior covering. Another devotes his disapproving adjectives to the Colonial and Gothic styles, besides fostering a strong dislike for the Classic, as he speaks of the Art Institute as ugly, while a third scribbler makes a plea for something "new," a freshly-invented style, not arising out of present needs, but a general crazy-quilt of whatever has been seen on the earth.

That the profession may obtain benefit from these letters, as well

as amusement, a few extracts from different letters are given below:
"Employ only architects who are also artists; most 'architects'
are only builders" are only builders.

"Let an architect learn to erect beautiful apartment-houses and cy-scrapers, most of which are now eye-sores. The store-box styles sky-scrapers, most of which are now eye-sores. The store-box styles especially should be avoided."

"Abandon the Colonial style, which is crude and essentially ugly.

It was excusable two hundred years ago, but not now, when the people have travelled and seen beautiful buildings."

"Don't allow the Government architect to design our new post-

office."

"Don't build any more Gothic churches. Chicago has scarcely anything else, although there are other equally good styles. Try the Basilican, Greek, Byzantine and Russian."

"The Lake Shore drive has every natural attraction, but what can be said of the architectural failures that have been placed upon it? There is every style of architecture there, one may say, from Egyptian down to a style that characterizes the nineteenth century, which is unsettled and allows of too great license. It combines too many different periods and styles, which results in a total lack of symmetry. Let the property-owners and the Lincoln Park Commissioners protect the people of Chicago from being forced to look at any more mongrel architectural failures on the Lake Shore drive. The property-owners and the Commissioners should appoint a jury of nine architects to determine the acceptance of architectural plans for houses to be placed there. The architects should be equitably paid, to be unflinching in keeping up the proper standard."

Architecture seems to be especially the branch of art in which the public at large considers that no education is necessary for a perfect

public at large considers that no education is necessary for a perfect and proper understanding of the matter. In the question of styles, the otherwise well-educated man and woman is totally ignorant, and even in our classes of design, too little attention is paid to the subject of history of design, so that a student who can do excellent work when given a problem is quite at sea when asked to work up the smaller and finer shades of detail, say in the decoration of a room. With a good solid basis of information, the decorator may appear to feel his way; but without that ease that comes of hard study first, his work is often reduced to a nondescript combination of forms and color which is by no means without offense to the educated eve and taste.

During the last month one of the June thunderstorms illuminated an During the last month one of the June thunderstorms illuminated an interesting subject in connection with steel buildings. The "Teutonic," a large office-building on the corner of Fifth Avenue and Washington Street, was struck by lightning, the first one of the sky-scrapers to which this accident has ever happened. This special building is a ten-story steel structure. The lightning appears to have been attracted by the steel support of a terra-cotta finial of a balustrade, about a foot and a half above the balustrade at its highest extremity, while the lower portion is directly connected with the steel frame. while the lower portion is directly connected with the steel framework of the building. When the point of contact came to be examined, the surroundings together with the fact that all the electric-light plugs were blown out in the basement naturally suggested the idea that the electric-current passed from the metal finial

support directly into the steel skeleton of the building, which served a conductor for the current literally from turret to foundation one. The tenants of the big building from the tenth to the sixth floors felt the shock most severely and rushed from their offices into the halls, where they were met by the most brilliant display of the electric-flash in the central court. No one was at all injured and electric-flash in the central court. No one was at all injured and before they could make their escape from the building the disturbance had passed away. This accident, while it shows the liability of these high steel buildings to attract to themselves the electric-currents, also shows the probability there is of the current confining its attention to the steel framework, and consequently passing off harmlessly into the ground.

passing off harmlessly into the ground.

In old times, when Chicago presented fewer attractions, the grain elevators were one of the sights to be seen in the city, though of late years they have been rather crowded into the background. A new interest may centre around them, however, if certain proposed reforms in their construction are carried out. An engineer connected with the movement is reported as saying "A salient point of the system is the cyclone principle of moving grain in tubes or pipes with a centripetal motion. This keeps the grain from contact with the conduits and in that way prevents injury to it. The bins are to be of steel or iron which reduces the cost of insurance. By being able to construct these bins some distance from unloading points they can be placed upon ground of relatively less value than that immediately contiguous to a river or harbor frontage." A certain amount of friction at present exists between the Board of Trade and the elevator men, and this will, doubtlessly, be a means of pushing

the enterprise forward.

Imre Kiralfy, the man of many shows, has now on foot a scheme to give one of his great spectacular productions here in Chicago, under the patronage of what will be known as the Chicago Exhibition Company. The Company has applied for papers of incorporation, and two tracts of land in the near vicinity of Jackson Park are being considered as possible sites for the proposed building, for which one of our prominent architects has made preliminary sketches. Though the building will be what will be called permanent, much material will be used from the World's Fair salvage, which will naturally not make of it anything of a very substantial between Theoretic is estimated will be between forces of such states. The cost it is estimated will be between five and six hundred thousand dollars, the building being over seven hundred feet long by three hundred and fifty feet wide. It will be in three parts: the auditorium, two hundred and fifty feet long, having a seating-capacity of ten thousand; miniature Venice and a Venetian garden. Lagoons will be introduced as a feature, on which gondolas will take the visitors after the performances, which will be an enlarged "Merchant of Venice," to the cafés and restaurants which will be a feature of the Venetian garden, as well as cascades, temples, grottos, fountains, etc. In miniature Venice an attempt will be made to reproduce the shops, palaces, bridges and canals of the Italian city.



Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

UNION STATION, TORONTO, CAN. MESSRS. STRICKLAND & SY-MONS, ARCHITECTS, TORONTO, CAN.

A HOUSE ON THE FOOTHILLS. MR. P. G. GULBRANSON, ARCHITECT, BOSTON. MAGG

HOUSE FOR MESSRS. WENDELL & SMITH, GERMANTOWN, PA. MESSRS. W. L. PRICE AND C. H. KIRK, ASSOCIATED ARCHI-TECTS, PHILADELPHIA, PA.

"HOUSES AT GHENT" FOR LIEUT. L. W. T. WALLER, NORFOLK, VA. MR. W. J. MARSH, ARCHITECT, WASHINGTON, D. C.

HALL IN THE HOUSE OF MISS ELIZABETH A. HALLOCK, WASH-INGTONVILLE, N. Y. MR. E. G. W. DIETRICH, ARCHITECT, INGTONVILLE, N. Y. NEW YORK, N. Y.

[Additional [llustrations in the International Edition.]

SOUTH FRONT OF THE CALIFORNIA STATE BUILDING, WORLD'S FAIR, CHICAGO, ILL. MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL. [Gelatine Print.]

SKETCHES AND DETAILS AT RAGUSA, ITALY: TWO PLATES. THESE illustrations are copied from Zeitschrift für Bauwesen.

TUDOR CHAMBERS, 54 AND 55 CORNHILL, LONDON, ENG. MR. ERNEST RUNTZ, ARCHITECT.

THE illustration we publish of this building is taken from a watercolor drawing by the architect. The site, which is prominently

situated in Cornhill, adjoining the main entrance to St. Peter's Church and the London and Midland Bank, although not having a large area, has an extensive frontage, the ground-floor portion and basement being appropriated entirely for shop purposes, and the entrance for the office portion, with lift to the upper floors, being in St. Peter's Alley. The building is to be faced with the so-called pink terra-cotta, but in this case no effort will be made at uniformity, but rether projects in the abades of the facility of the state of the facel of t but rather variety in the shades of the finished material. By adopting this course it is anticipated that the general harmony of the building will be greatly improved. Certainly it will be a useful experiment, and will be watched with interest by architects who favor the material in question. From an artistic point-of-view, we are of opinion that it is likely to prove very satisfactory. The style The style adopted by the architect is a somewhat free treatment of Tudor work, refining much of the ornament in the direction of Italian Renaissance. The building, although designed for letting as shops and offices, could be easily adapted for the occupation, as a branch, of some large insurance or other company, for which purpose it will probably be used, as its position is unique.

GARDEN FRONT: ENDALLS MANOR. MR. JOHN BELCHER, AR-CHITECT.



BOSTON, MASS. - Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts.

New York, N. Y. — Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

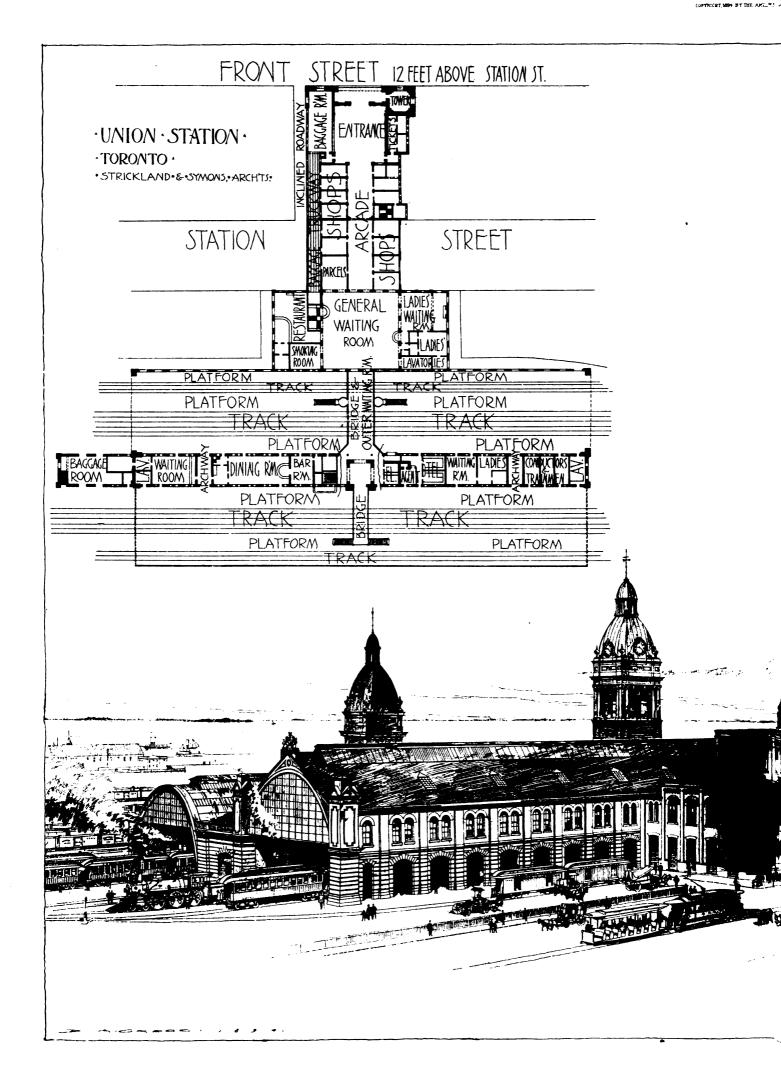
Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

An American Artist playing to the Galleries.—A Paris journal says that the American artist Mr. Thomas Shields-Clarke, at present resident in Paris, pursues five different branches of art in five different studios. In his studio in the Rue Darcau he is known as a landscape painter only. Precisely at 9 o'clock every morning he enters his atelier and paints steadily (in oils) for two hours. When the clock strikes 11 he hurries away to another studio in Rue St. Honoré. Here he picks up chisel and hammer, dons the sculptor's blouse, and pounds away at a block of marble. Two hours later, the blouse and implements of the worker in marble are laid aside, and the artist drives in a cab to the Rue Clement Marat, where, in a third studio, he devotes a couple of hours to water-color painting. The rest of the day he divides between portrait-painting and etching in his other two studios across the Seine. Mr. Shields-Clarke is the only artist in the world pursuing his profession in five different workshops. His first Salon picture was a Dutch subject in oils, but this year he is exhibiting at the Champ de Mars products of his five studios.— N. Y. Tribane. ARTIST PLAYING TO THE GALLERIES. -AMERICAN

How London pays for its Bridges. — There is a good deal of misconception as to the source from which the City Corporation gets the money for the Tower Bridge. The Corporation generally gives the impression that the funds are found by it in its corporate capacity. Mr. Edward Tewson, the well-known estate agent, was asked before the Lords' Committee on Betterment where the money came from, but could not say beyond the general statement that the bridge was built at the Corporation's "own cost." As a matter of fact the money comes from the accumulated surplus of the Bridge House Estates, which were originally intended as an endowment for the maintenance of London Bridge. The Corporation was appointed trustee of the estates, but can only apply the money to the building and maintenance of bridges. The growth of the estates has enabled it not only to maintain London Bridge, but to build Blackfriars Bridge, acquire and free Southwark Bridge, and erect the Tower Bridge. — Illustrated Carpenter and Builder.

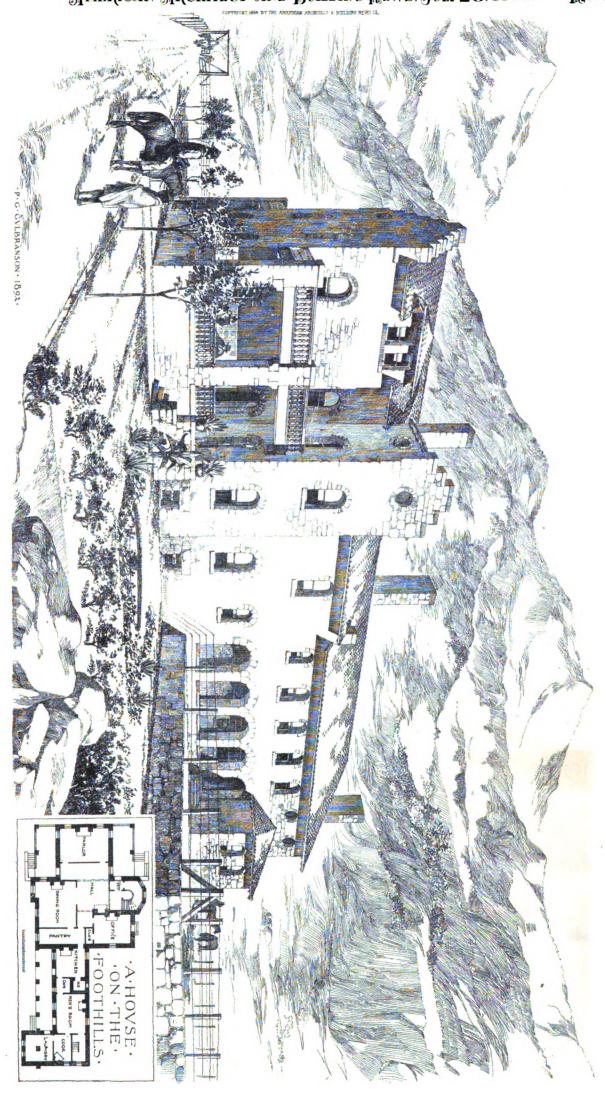
Coron's Odd Price for a Picture. — A very amusing anecdote concerning the brother of the new President of the French Republic is related by M. Ziem, the Venice artist. The brother of M. Casimir-Perier was on intimate relations with Corot. Ile came, one day in 1875, to see the painter at Barbizon, just at the moment when Corot was putting the finishing touches to his "Biblis," a picture which represents nymphs sleeping in a wood. His enthusiasm for this work of art, where the poetry of the subject was contending with the science of the painter for superiority, made him wish to possess the canvas. "You shall have my picture," said the artist, "on one condition, and it is that you will pay the butcher's and baker's bill of my friend Millet." "Agreed!" replied M. Perier, a little astonished at this curious condition. The bills were sent for to Chailly, when it was found that the accounts had been running with the two tradesmen for fully twelve years. The one amounted to 22,000 f. and the other to 24,000 f. M. Perier paid the bills without moving a muscle. His Corot cost him 46,000 f. Today he would not take three times that amount for it, but, nevertheless, during the life of the painter it was only worth some 1,300 f.—London Figaro.

S. J. PARKHILL & Co., Printers, Boston, U. S. A.



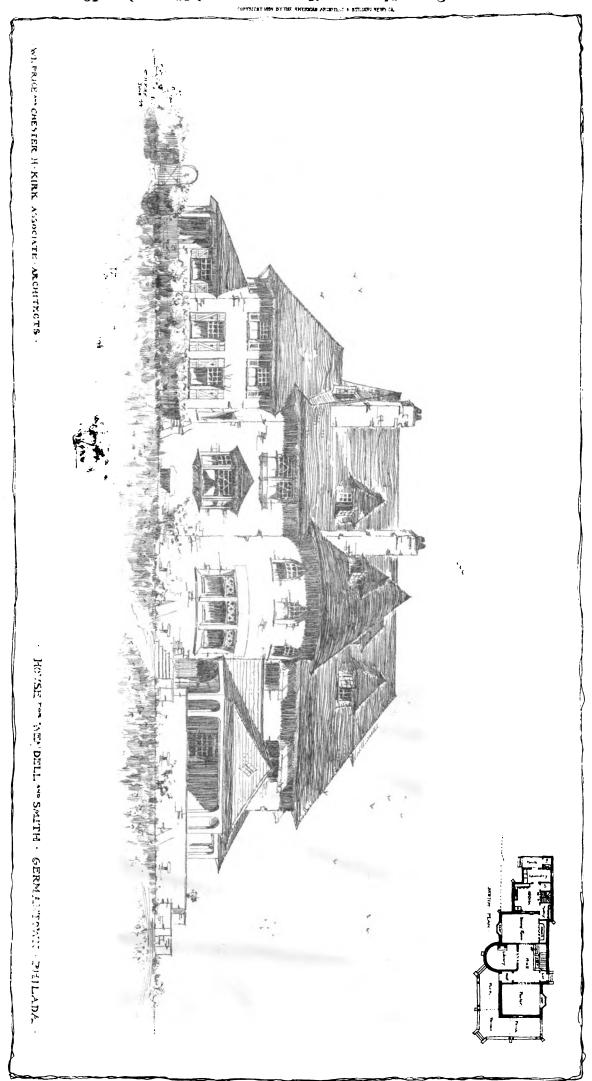


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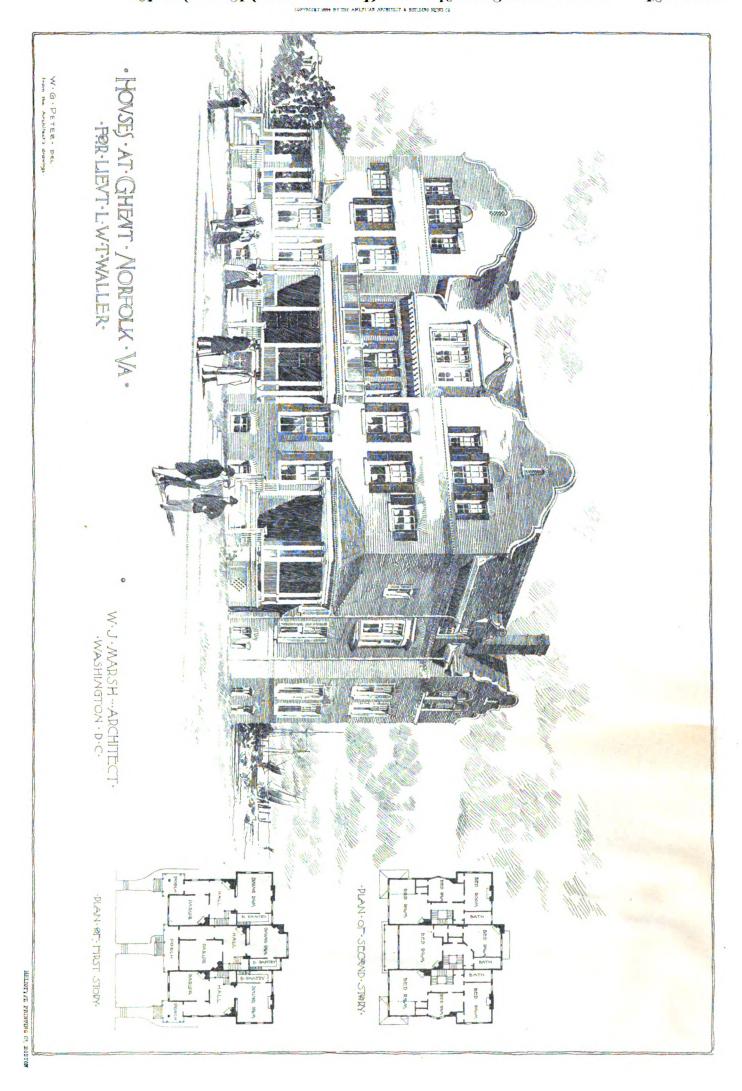




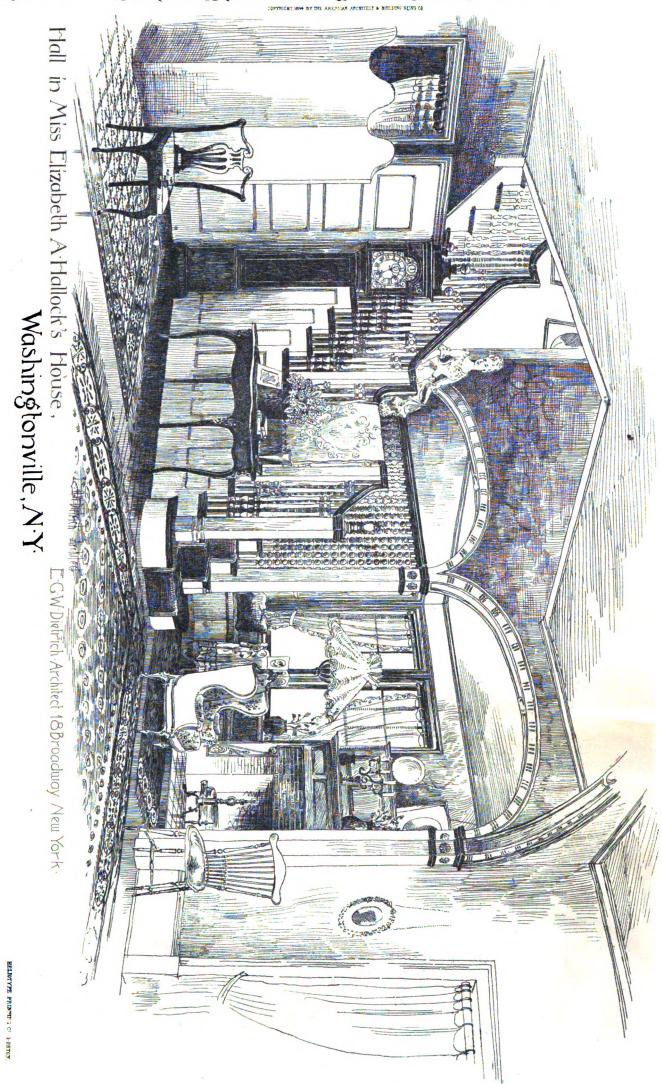
RO. 970. SMERIGAN ARGHITEGT AND BUILDING NEWS. JULY 23. 1594.



HELIOTYPE PRINTING C', BOSTON



No. 970. American Architect and Building News. July 28. 1594.



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Arbitration between the Mason Builders and the Bricklayers of

ILLUSTRATIONS:

USTRATIONS: —
Porte Cochère to House of Cornelius Vanderbilt, Esq., 58th St., New York, N. Y. — House at Hartford, Conn. — House at Morristown, N. J. — House at Tenafly, N. J. — Study for a City House.

Additional: House of Cornelius Vanderbilt, Esq., 58th St. and Fifth Ave., New York, N. Y. — Wrought Metal Gateway, 58th St., New York, N. Y. — Corridor of the Battersea Polytechnic, London, Eng. — Interior of Lincoln and Lindsey Bank.

City Building and Qualified Architects. . . EXHIBITIONS

LTHOUGH the actual affair has passed by, we think that the interest and importance of Mr. Garrison's award, as arbitrator between the Boston Master Builders' Association and the Bricklayers' Union, in regard to a proposed cut in the rate of wages, justify us in availing ourselves of an unfilled space sufficient for printing it at length. We will say nothing here of the admirable spirit displayed by both masters and men in laying their case dispassionately before such a tribunal, as every reader will make his own comments; but it is worth while to point out the singular merits of Mr. Garrison's award. It would have been easy for him to give some arbitrary decision, based on nothing but his own whim, and he might have saved himself in that way from the criticism which his arguments will call out from dissatisfied and unreasonable people; but instead of doing this, he has thought best to try to convince both parties of the justice of his decision, by setting forth the grounds on which it was based; and he has done this with a considerate clearness which is worthy of the highest praise. If labor disputes were generally approached in such a spirit, they would soon become rare, and it is much to be hoped, not only that the members of the National Association of Builders will continue in their disposition to settle all such controversies in this way, but that they may always find arbitrators as firm and clear-headed as Mr. Garrison.

E would like to invite special attention to a letter from Mr. Talcott Williams, of Philadelphia, printed in another place, in regard to an article in the Philadelphia Press, making one of the most sensible suggestions for raising the standard of the profession of architecture, and securing the public against incompetency, that we have ever seen. As our readers know, we have for years advocated, in connection with the opening of public employment to the profession, the establishment of examinations, the passing of which should entitle the candidate to classification as a "Government architect," and the restriction by law of the design and supervision of Government buildings to architects holding this rank. This, like the plan proposed by the Philadelphia Press, without attempting the almost hopeless task of excluding anybody definitely from the profession, would establish a certain differentiation among architects themselves, which, by giving the young and ambitious something to work for, would elevate the tone of the profession, at the same time that it afforded the public a means of judging of the comparative skill of architects which it very much needs.

HERE would be some advantages in carrying out precisely the scheme Mr. Williams suggests, and there would be some disadvantages and more difficulties, and it is doubtful whether the advantage to the public would be very perceptible

in this generation, since the men competent to do good work have now, as a rule, about as much as they are able to attend to properly, and could only undertake more at the risk of the quality of their output as a whole. There is, moreover, one very distinct defect and difficulty in the scheme, which, though apparently laughable, might prove dangerous. It would put the building operations of a great city absolutely at the mercy of the comparatively few men who could pass the required examinations, and if by chance any conceivable influence could induce them to combine on the lines of a trade union, and refuse to make the drawings or even to sign them, a tie-up would be effected which would be more disastrous than any strike or boycott that was ever devised by the most conscienceless board of walking-delegates. Although the men who practise architecture are distinctly high-minded, and not likely to do wanton injury to innocent parties, it is, nevertheless, conceivable, that in face of repeated decisions on the part of the courts, which seek to reduce all charges to a per diem basis -so manifestly unfair in most cases where it is applied — a strike of licensed architects might be arranged and carried out as being the only available means of righting an injustice.

MONG the good works undertaken by the National Sculpture Society, one of the best is its recent offer of two prizes, one of three hundred dollars, and one of two hundred dollars, for the best set of designs in plaster, for the silver dollar of the United States. As the circular announcing the offer rather pointedly says, "The artists of the United States have criticised severely the existing coinage. On this account, especially, they should now be urged to make, under the requirements of the law, a more artistic design for a coin than now exists." The "requirements of the law," however, are, it must be confessed, a little opposed to the production of the most artistic possible designs for coinage. Under Section 3517 of the Revised Statutes of the United States, it is decreed that "Upon the coins there shall be the following devices and legends: Upon one side there shall be an impression emblematic of liberty, with an inscription of the word " Liberty," and the year of the coinage, and upon the reverse shall be the figure or representation of an eagle, with the inscriptions "United States of America," and "E Pluribus Unum," and a designation of the value of the coin; but on the gold dollar and three-dollar piece, the dime, five, three and one-cent pieces, the figure of the eagle shall be omitted." Owing, doubtless, to the clouds which have been, of late years, raised in this country by the apostles of collectivism, socialism, trades-unionism and the other 'isms which contemplate the forcible subjection of the individual to the organization, the exact appearance of the Goddess of Liberty seems to have been forgotten, and medallion portraits of various estimable young ladies, with unbecoming head-dresses, have, with the acquiescence of the Treasury authorities, been substituted for the ideal figure of our earlier coinage. At present, therefore, those artists to whose keener sight the goddess may condescend to reveal herself will be legally entitled either to embody their vision in their design at full length, or to present to us only the divine face or profile, at their discretion, and we hope that the artistic champions of American Liberty will be able to show her not less fair than the Greek Pallas Athene, or the Sicilian

IS to the eagle, less hope can be entertained. While we annot quite agree with those who think that the coinage laws should be amended by substituting the turkey for the eagle, as the symbol of American aspiration, it cannot be denied that the aquiline character, on close investigation, does not present just the ideal which Americans prefer to contemplate. A bird which, like the bald-headed eagle immortalized in our coinage, waits around until it spies some industrious hawk carrying food to its nest, and then, with a savage screech, dashes upon the poor creature, and snatches away its property, is a much more appropriate representative of ancient imperialism, and modern socialism, than of the respect for individual rights on which our Republic is based. However, if the big, feathered bully which turns tail before the assaults of the tiny king-bird is not likely to inspire the artist with very lofty conceptions, it is a consolation to reflect that he could not be more ignobly represented than on our present coinage; and that a sculptor with, perhaps, a little of the Japanese spirit in him might fill the allotted space agreeably, if not very nobly, with a well-modelled relief of an eagle in flight. The circular sent out by the Sculpture Society provides that the models submitted in competition must be six inches in diameter, cast in plaster, and mounted in pairs, one cast of each pair showing the obverse, and the other the reverse, of the coin, on boards of light-colored wood, twelve by twenty-four inches, and three-quarters of an inch thick. Models will not be received until January, 1895, but must be sent in time to be shown at the annual exhibition of the Society, which occurs early in the year. Preliminary studies of any size will be received and exhibited in connection with the finished designs. Further particulars will be announced in October, but, for the present, all information needed may be obtained from the Secretary of the Society, Mr. F. Wellington Ruckstuhl, 37 West Twenty-second Street, New York.

HE British Architect, in referring to some remarks of ours in regard to the impolicy of expecting architects to warrant the cost of carrying out their designs, brings up, indirectly, a question of considerable importance. of our anecdote of the builder who made his bid on eighthscale drawings, under the hallucination that they quarter-scale, it says that "an architect who knew his business would generally find ways and means of checking such stupidly reckless tendering as that referred to above." This is undoubtedly true, but, to our mind, the fact that the architect thought an estimate too low would be very far from justifying him in asking the bidder to revise it. In fact, this very problem is one of constant occurrence in practice, more particularly, perhaps, in that of young architects, who have more to do than their elders with inexperienced or careless contractors. A number of tenders are received for a given piece of work, and opened by the architect. His own judgment, reinforced by comparison with the other bids, convinces him that the lowest tender is too low, and that the work cannot be carried out for the sum specified without loss to the contractor. Is it his duty to reject this tender, and accept a higher one, or to notify the bidder that there is probably some mistake about his estimate, and ask him to revise it? We think decidedly that it is not. Of course, the architect has no right, even in the owner's interest, to take advantage of an obvious mistake, and we think it would be allowable for an architect who thought that a tender was too low to question the bidder cautiously, to ascertain whether he had really included all the intended work in his estimate; but further than this he cannot properly go. If his drawings and specifications are clear and full, so that an intelligent builder ought to be able to ascertain from them just what is intended, his duty toward the bidders is fulfilled, and his duty is then toward the owner, to get the work carried out faithfully and promptly, on the best terms that he can. With this object in view, he would be justified in rejecting a bid that he thought too low, and accepting, or rather, advising the acceptance of, a higher one, in the owner's interest, if he thought that the lowest bidder, finding himself losing money, was likely to abandon his contract, or in other ways cause the owner annoyance and delay, for which the saving in the contract price would not be a satisfactory compensation; but this decision should be based on the owner's interest, not on that of the builder. If, on the contrary, he knew the lowest bidder to be a man of means, able to bear losses due to his own carelessness, we think that it would be the duty of the architect to accept his tender for the owner, or, at most, to explain the circumstances to the owner, and put the responsibility of the decision entirely upon

We knew a case where a very low bid was made by a perfectly responsible man, for some exhibition buildings in South America. The tender was probably less than the actual cost of the buildings, but it turned out afterwards that the bidder

had made a private arrangement for selling the structures, after the exhibition was over, to a new railroad company in the country, for use as station buildings, and he would have made a large profit, even at his own price. It is evident that if the architect had rejected the lowest bid in this case, simply because he thought that the bidder had made a mistake, he would have grossly betrayed the interest of his clients; and every architect of experience knows of similar cases, where builders of ingenuity and resource have been able to complete with credit, and even with profit, a contract which they had taken at a price which seemed recklessly low. It is, therefore, extremely unwise for architects to assume that a bid is based on a mistake, simply because it is low, or to come to the rescue of contractors who deliberately make tenders without trying to ascertain exactly how much work they are expected to do; and, while they should be, as they are legally bound to be, ready to adjust mistakes that may become evident before the signing of the contract, they have no right to assume the existence of mistakes, to the owner's prejudice, or, after the acceptance of the tender, to permit any corrections without the owner's consent.

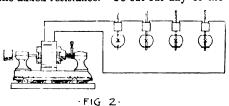
THE investigations of the Lexow committee into official corruption in New York and the ruption in New York are to be resumed next month and it is to be hoped that the lead opened by Mr. Kilpatrick, a builder placed upon the stand before the recess, will be followed out. According to him, it is the custom of most builders in New York, to "buy their way both with the police and the building inspectors," and in the interest of the public, as well as of owners and contractors, it is quite time that the state of things generally understood to exist in New York building matters should be ameliorated. Architects do not often have much to do with any except the official at the head of the Bureau of Buildings in New York, and this post has generally been occupied by conscientious, earnest and intelligent men, to whose counsels and suggestions no architect need be ashamed of being greatly indebted; but it is at least common report in the building world, that the favors of the inferior inspectors, and of the police, who have control over street obstructions and similar matters, are often purchased, to the injury of honest people, who are unable to obtain by fair means the advantages which their competitors gain surreptitiously.

WHETHER the evil which has been complained of for so many years can be abolished by such as many years can be abolished by such an easy and transitory effort as an investigation by a volunteer committee is another question. To a large part of the class of men who furnish police-officers and sub-inspectors, there is nothing objectionable about bribery and extortion, so long as it is not found out; and the modern method of dealing with that class is certainly not calculated to diminish the prevalence of this opinion. On the contrary, the entire world of people of hazy intellect, and undeveloped moral notions, is told day after day, and week after week, by editors, politicians, philosophers, anarchists and others, that they are entitled to a share of the savings which those more honest and energetic than themselves have been enabled to lay up. The only difference in the teachings is in regard to the manner in which they shall get possession of this share. The anarchists tell them that the proper way is simply, when they can see a man with money or property, to kill him, and help themselves; and, if they happen to get, by this process, a little more than their proper share, to charge the surplus to interest on what they ought to have had before; the socialists, who shrink from this logical consequence of their teachings, advocate the more roundabout course of having the State seize the coveted goods, and distribute them among its constituents; while the politicians modify the latter idea by proposing that the property taken for distribution should be that mainly held by their political opponents. Thus taught, it is not surprising that people of this sort, who form a large and increasing portion of mankind, when they find themselves armed with a certain control over the affairs of others, should utilize their opportunities to transfer to their own pockets some of the money of which, as they are told, the rich merchants and builders under their jurisdiction wrongfully retain possession. The remedy for the practice of these extortions lies in strict supervision; but such supervision is difficult to secure; and if the Lexow committee can, after exposing official corruption, show how it is to be prevented, it will deserve the gratitude of the whole

ELECTRICAL SCIENCE FOR ARCHITECTS.1 - V. SYSTEMS OF DISTRIBUTION.

AMPS, or other electrical devices, may be connected in a number of different ways to form a distributing system, but considerations of safety, convenience or practicability have narrowed the methods down until there are but two in general use. These are the plain "series" and "multiple" systems. Arclamps, and incandescent lamps for street-lighting, are usually operated "in series," while incandescent lamps for general use, motors, and other devices are almost always operated "in multiple."

When lamps are operated in series, the same current passes through each, and all lamps in the circuit are interdependent. If through each, and all lamps in the circuit are interdependent. It the circuit be broken in any place, all the lamps will go out. With this system, the current is kept constant, and, if more lamps are added, the pressure at the dynamo must be increased to overcome the added resistance. To cut out any of the lamps, it is necessary

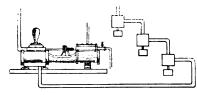


first to make a by path around the lamp to preserve the continuity of the circuit and then the con-nection to the lamp may be broken. But it is also necessary to either replace the lamp by an equiva-

lent resistance or else lower the pressure at the dynamo, for otherwise the strength of the current would be increased in proportion to the decrease in the resistance of the circuit. Figure 2 represents an electric circuit in which the lamps are connected "in series.

The principle of this series system can perhaps be brought out more plainly by showing its analogy to a system of water-wheels operated by one stream of water. In Figure 3 are shown three water-wheels "in series," or, as it is sometimes expressed in electrical parlance, "in tandem" or "in cascade." The pump, which is analogous to the dynamo, creates a pressure, raises the water to a height and gives it a definite "head." This pressure or head corresponds to the voltage

or pressure in the electrical circuit. The water falls in a stream corresponding to the electric current, and operates the water-wheels which here take the place of lamps. At each wheel there is a definite resistance to the flow of the water and



· FIG · 3

a part of the energy is transformed into the work done by the wheel. The water falls to the next wheel where it has a diminished "head," but the same in proportion for the number of wheels it has yet to operate. If another wheel were added, the pump would have to be run so that it would give proportionately greater pressure or head, but the current or flow of water would remain the same.

It will be noticed that the working of the wheels is influenced only by the pressure or head that exists between the point where it

one wheel and the point where it leaves the next. It makes no difference how many or how few are in series, provided only that the total pressure is sufficient to keep this pressure for each wheel So in electrical series working the current is kept conthe same. So in electrical series working the current is kept constant, and the pressure necessary is the pressure needed for each device multiplied by the number of devices. Thus, a "2,000 candle-power" arc-lamp requires, approximately, 50 volts pressure. If there are 50 lamps in series, the total pressure at the dynamo is 2,500 volts; if there are 10 lamps in series, the total pressure is 500 volts. The current in the circuit would be the same in both cases,

It will be seen, too, by the water-wheel illustration, that if one wheel is shut off by closing a valve in the pipe above it, all the wheels will stop, for the continuity of the circuit will then be broken. If one wished to stop one of the water-wheels, it would be necessary first to "short-circuit" one of them by opening a passage around it. The water running directly to the wheel could then be shut off entirely, and the current or flow would continue through the bypassage. This passage around the wheel could be made to offer exactly the same resistance that the wheel did, and in that case the pump could keep on developing the same pressure as before, and the other wheels would all continue to work uninterruptedly. If, however, the by-passage offered little or no resistance, the pump would, of course, have to be run so that it would not develop so much pressure, for, otherwise, the current would be greater through all the wheels, and might be more than they were made to operate

Water-wheels, operated as shown in Figure 3, would all be transforming the energy due to the current of water into other forms. They would be doing work and the "rate of work" could be measured by multiplying the pressure or head by the flow of water or gallons per minute. From this, the foot pounds per minute or horsepower could be readily determined. And so with the electric circuit. There is work done at the lamps, where the electrical

energy is transformed into heat and light energy, and this "rate of work" can be measured by multiplying the pressure, or volts, by the current, or ampères. One volt multiplied by one ampère gives one "watt," the unit of electrical "rate of work." 746 watts make one horse-power, and there is here the direct connection between

electrical energy and the more familiar mechanical energy.

When an electric current is broken, power is no longer being expended, for although the electrical pressure may be kept constant, the current, the other factor determining the amount of power, has become zero. The hydraulic circuit used for illustration

power, has become zero. The hydraulic circuit used for illustration is not, of course, completely analogous to an electrical circuit, but it can be seen in this, too, that if a valve were closed just above the pump, the pressure might still be there, the steam might be in readiness pressing against the piston of the pump, but there would be no work done until the valve should be opened.

In the arc-light circuit, it is the number of lamps that determines the horse-power required to drive the dynamo. Each lamp is converting electrical energy into light and heat, which are given out to surrounding substances. The carbon rods are made to be a part of the circuit, and the mechanism of the lamp brings them together for the circuit to be formed through them. When the current is forced through the high resistance of the contact, the carbon points heat, through the high resistance of the contact, the carbon points heat, and at the same time the mechanism causes them to be slowly drawn apart. The current follows across the intervening space, because to some extent. The resistance for such a short distance is, however, so great, that an intense heat is produced and the carbon points and particles are raised to a high degree of incandescence. This incandescence represents the expenditure of a definite amount of energy, of a certain amount of coal burned under the boilers. If there is a current of 10 ampères through the lamp, and a difference of pressure of 45 volts between the point where the current enters the lamp and where it leaves, then 450 volts, or about .6 horse-power,

the lamp and where it leaves, then 450 voits, or about to norse-power, is a measure of the rate at which work is being done at the lamp.

The "series" system of lighting offers many advantages when arc lamps are used. With these, a high potential circuit is not seriously objectionable, and when the pressure at the dynamo may be 2,500 or 3,000 volts, a comparatively small wire may be used to transmit the energy required for the 50 or 60 lamps in a circuit. For example, 5 miles of No. 6 copper wire has a resistance of about 10½ ohms. If this wire is carrying an arc-circuit current of 10 ampères, there will be required 105 volts ($E=CR=10\times 10\frac{1}{2}=105$) pressure to force the current through the resistance of the wire alone. This will mean that the rate of expenditure of energy in the wire is 1,050 watts; (watts = $EC = 105 \times 10 = 1,050$) or about 1.4 horse-power (horse-power = $\frac{\text{watts}}{746} = \frac{1050}{746} = 1.4$). This, however, would be only 4.20% of the total energy following in the contraction.

ever, would be only 4.2% of the total energy of the circuit if the pressure were 2,500 volts at the dynamo. But suppose the total pressure at the dynamo to be 105 volts and the current to be forced through the circuit the same as before, 10 ampères. The loss in wasteful heating of the wire would be exactly the same, for it depends only upon the resistance and the current to be forced through this resistance. The total power of the circuit is now, however, only 1,050 watts $105 \times 10 = 1,050$) so that the loss in the wire is 100%. The whole of the power is spent in simply forcing the current The whole of the power is spent in simply forcing the current through the resistance of the wire. There would be nothing left at all for useful work. If any lamps were put in circuit, they could not have the full current. There would be an added resistance, and the current would immediately be less, by an amount that would compensate for the work one tried to add.

In street-lighting, where the lamps are so widely distributed, there is another advantage in the series system. Since the lamps are connected in circuit one after the other, only one wire need be run to the lamp, and another away from it, to the next. Where the "multiple system" is used, it is necessary to run two wires in all places, and from these leads are taken off and connected to the

The series system is also satisfactory for incandescent lamps in the streets, but it is unsuited for interior lighting. With lamps in all sorts of places, as they are in a building, the voltage must be there are many lumps in series, the voltage must be there are many lumps in series, the voltage or pressure that is necessary is difficult to make safe, and the necessity, too, in the series system, of providing equivalent resistances or shunting devices for the lamps turned off, makes an awkward complication of lawings. devices. Incandescent lamps, and, in general, all devices except arclamps, are consequently run on the "multiple system" and even

arc-lamps, for interior lighting, are in many places being thus connected.

Devices connected "in multiple"

independent of one another, each re-ceiving at its terminals the full pressure of the system which always remains the same, no matter how many of the

lamps or other devices are being operated. It is here the current that changes, each lamp adding its

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FIG. 4.

electrical circuit operated in this way is shown in Figure 4.

The hydraulic analogue may be represented as in Figure 5.

Here, the pump keeps up between the two pipes, A and B_f a

¹ Continued from No. 955, page 18.

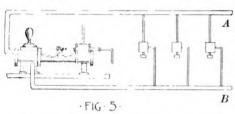
constant pressure, and between the pipes are connected the waterwheels, c, d and e. It will be seen that the wheels are quite independent of one another. c may be shut off by turning a stop-cock dependent of one another. c may be shut off by turning a stop-cock in the small pipe leading to it, without interfering at all with d and e. If the pressure between A and B is kept constant, the only effect, caused by turning off one of the wheels, is to diminish by one-third, the amount of water delivered by the pump.

The power expended in the whole circuit is the same here, of course, as in the series system, the pressure multiplied by the current. But while in the series system the current remained

current. But while in the series system the current remained always the same, while the pressure varied according to the number of devices operated, here there is always the comparatively low pressure required by one device, while the current from the pump or dynamo varies according to the number of devices operated.

The effect of a "short circuit" on an electric system may be appreciated by imagining a large pipe, one of very low resistance, connected directly between the two supply-pipes, thus making a "shunt" or by-passage around the water-wheels. There would be nothing to limit the flow of water through it except the resistance to the passage of the water and the ability of the pump to supply it. With an electric circuit on the "constant potential" or "multiple" system, there is an analogous action when the wires are connected system, there is an analogous action when the wires are connected by a conductor of low resistance, or when they themselves come The dynamo is so constructed that it tends to keep the pressure constant. A tremendous current passes through the wires forming the short-circuit, and if the dynamo is of sufficient size and if there are no protective devices in circuit, the wires will heat until

It is a common statement that the electric current chooses the exact. More current will go through a path of low resistance than through a path of higher resistance, but the total current will divide in exact inverse proportion. In Figure 5, a large pipe may be connected between A and B, and the flow of water in it will be proportional to the difference of pressure between A and B and be connected between A and B, and the now of water in A and B and proportional to the difference of pressure between A and B and B and B and B and B and B are connecting pipe. But inversely proportional to the resistance of the connecting pipe. But the current through



any other pipe, no matter how small, between A and B, will also be proportional to the difference of pressure be-tween its ends and inversely proportional to its resistance, just as if the

larger connecting pipe were not there. If the large pipe carries so much water that the pressure between A and B cannot be kept up by the pump, then, of course, the amount that will flow through any other pipe will be smaller than before the large pipe was connected. This, however, is because of the effect on the pressure and not because the water chooses the large pipe to the exclusion of the RUSSELL ROBB.

(To be continued.)



tains some interesting facts concerning the gold output for the year 1893. From these it is seen that in Canada, gold-mining has reached a recognized position among the canada, gord-mining has reached a recognized position among the industrial pursuits of the country, a fact which is encouraging on the whole, though it is possible there has been no department of mineral prospecting that has been more replete with disappointment and even ruin to individuals. Gold in Canada is not to be found in such quantities as would excite mad rushes of gold seekers; there are no "diggings" where a fortune may or may not be made by a sudden "diggings" where a fortune may or may not be made by a sudden stroke of luck. The precious metal here is so combined with the ore, that a great deal of dogged patience, hard labor and mechanical skill are necessary in its extraction. But, for all this, gold is to be had and the amount produced is on the increase year by year. Compared with copper and iron ore, the output of gold for 1893 was of much greater value than the iron and nearly equal to the copper, for the gold amounted to 51,609 ounces valued at \$827,244, while the value of the copper was \$875,864, the value of the iron being \$298,018. The gold ore varies considerably; a great deal of it is altogether unprofitable for ordinary working. But there is no doubt that with capital wisely employed in the purchase of proper machinery, a great deal more might be realized. So hazardous have

been the gold-mining undertakings and experiments, that it would seem as if the present gold miners were afraid to risk much capital and the machinery used is antiquated and wasteful, while for want of care a great deal of gold is lost in the washings. The results, however, obtained even by these crude measures give encouragement, and hope may be entertained of considerable improvement in ment, and hope may be entertained of considerable improvement in the methods of working. As an example, we may quote a recent instance. Thirty days' work produced 4,047 tons of ore; twenty-nine days' work on this ore produced \$2,644 worth of gold. The total expense of the reduction was \$2,120, leaving a profit of \$524. This was not by any means one of the richest ores, but the methods employed for the reduction of the ore must be materially improved before the possible profits can be realized.

As reported in an earlier letter, the Mining Acts of the Dominion appear to have been enacted for the purpose of enriching the Government, rather than for the purpose of developing the industry, the heavy royalties levied being such as render new undertakings very doubtful of success, financially, and existing operations almost unproductive of profit. Happily, an amendment has been secured which provides a great relief, insomuch that now all mining lands that have been heretofore sold or leased, and which have been heretofore sold or leased, and also all mining lands that may affected by the royalty charge, and also all mining lands that may be sold or leased before the first day of the year 1900 shall be free be sold or leased before the first day of the year 1900 shall be free be sold or leased before the first day of the year 1900 shall be free be sold or leased. This will from the imposition of royalty during all time to come. This will give a new impetus to mining and will be a welcome change to present and intending operators.

The concluding chapter of the celebrated Connolly-McGreevy case of conspiracy has been ended. It will be remembered that Nicholas Connolly and Thomas McGreevy, M. P., were indicted for conspiracy to defraud the Government in the execution of some heavy engineering contracts, Thomas McGreevy being a member of the Quebec Harbor Board and Connolly being a member of the firm of contractors, Larkin, Connolly & Co. The defendants were convicted and punished, but motion was made for a new trial. Three Justices of the Chancery Division delivered opinions upon this motion and upon a chancery provided by the real index of the chancery of the chanc three Justices of the Chancery Division derivered opinions upon this motion and upon a case reserved by the trial judge on questions of law. The decisions, of course, will form an important precedent and consequently are of great interest. The justices were of opinion that there existed abundant circumstantial evidence of the conspiracy charged, but one of the principal questions raised the conspiracy charged, but one of the principal questions raised the conspiracy and the principal questions raised the principal questions raised the principal questions raised the principal questions are principally as a conspiracy and the principal questions are principally as a principal questions of the principal questions are principally as a principal questions. was whether evidence was given which established a conspiracy and whether it was proper to allow the Crown to give evidence of acts done in carrying out the conspiracy before showing that the conspiracy existed. As to this, the judges were unanimously of opinion that conspiracy can be proved, without proving an actual meeting of the conspirators and an agreement then entered into; it is not necessary to prove the design first, but acts in furtherance of the alleged design may be given in evidence, not only against the defendants who committed such acts, but against the other conspirators also. The motion for a new trial was dismissed and the conviction con-

The case of Neelon vs. Lennox, in which the contractor, Neclon, sues the architect, Lennox, for wrongful dismissal from the works of the Toronto Court House, now in process of erection, promises to drag on for years and the patience of the profession must be exercised for an indefinite time, while it awaits the final result of the various trials to which the case will be subjected. The defendant architect is not alone on his side, as the City of Toronto is a party to the suit, and it is known that the plaintiff is "pretty well fixed," while it is stated that it is his intention to push the case to the utmost limits of the law even if it takes the rest of his lifetime and all his money to do it. The damages on the various counts, claimed by the plaintiff, foot up to the neighborhood of, now, nearly four hundred thousand dollars. It is most probable that before either party to the suit is satisfied, it will be taken before the Privy Council in England. The appeal allowed by the trial judge from his decision that the contract gave the architect authority to dismiss the contractor came up recently for argument, in the Chancery Division contractor came up recently for argument, in the Chancery Division Court. The Court, however, agreed with the trial judge and dismissed the appeal with costs, but if the plaintiff, the contractor, chooses to pay the costs of such part of the proceedings as would be abortive in the event of a new trial, he may do so and a new trial will be allowed. This gives the contractor the opportunity of opening and makes the proceedings. will be allowed. This gives the contractor the opportunity of opening up his case from the beginning, and makes the proceedings, so

far, of little effect.

M. C. Baillargé, C. E., of Quebec City, sends to the "Canadian Architect and Builder" a very instructive and interesting dian Architect and Builder" a very instructive and interesting account of the alarming land-slide that occurred at St. Albans, on the north side of the St. Ann River about thirty-six miles from Quebec, in May. Some idea of the extent of the catastrophe may be gained from his description. He says: "The chasm created by the slide is, at the western extremity, not less than a square mile in area and as its average depth is some seventy-five feet, the quantity of soil and sand and clay removed and corried feet, the quantity of soil and sand and clay removed and carried away by the river cannot have been less than seventy-five million away by the fiver cannot have been less than seventy-rive minon cubic yards at the western extremity of the slide alone, and much more than this if the portion be added from above the falls which is said to extend some three miles eastward thereof, but which I did not make an inspection of." The St. Ann River flows in an opposite direction to the St. Lawrence, though, roughly speaking, parallel with it, and the scene of the slide inspected by M. Baillargé is about twenty miles from the point where the St. Ann joins the St. Lawrence.

There the "upper river" is separated from the "lower" by a fall of about one hundred fect. The channel of the river above the falls became completely blocked by an immense quantity of sand, clay, and forest debris from the first slide above the falls, and this caused the waters above the falls to rise above their ordinary level to a height of one hundred feet. The weight of this water burst through this dam and made a new channel for itself, the rushing torrent reaching to a height of fifty feet above the ordinary level. A bridge spanning the river here, fifty feet high, was swept away, while the sandy shores overlying a clay formation were undermined, causing the immense land-slide mentioned above. This sand was carried into the St. Lawrence, rendering it "thoroughly muddy, and even thick with mud as far down as Quebec, discoloring the St. Lawrence for miles below. Some three houses were displaced and moved down with land towards the river, one of which . . . must be buried deep under the clay and sand, while the other two were found next morning some twenty arpents from their original position and about one hundred feet below and they had actually veered round by almost 180°, though maintaining their verticality. It must have been an awful night for the inmates of these two cottages, deafened by the roaring water and sliding earth; their cottages began to move in the dark and they could only wait in fearful suspense for what might be coming next. It was only at daybreak that Andy and Darveau found that they had travelled nearly a mile from their former position on the hill. Some twenty miles down the river from the falls the rushing water gradually ate away the shore, undermining several houses and out-buildings, and causing them to fall into the river and be carried away. The owners of the remaining houses were hastily moving their dwellings back, to prevent their their dwellings back, to prevent their M. Baillarge that this was his second removal in eight years, due to the same causes. Again reverting to St. Albans, it is to be feared that in the not remote future there may be a recurrence of these slides in adjoining parishes under concomitant circumstances, the subsoil being very probably honeycombed by water, infiltrating through the overlying sand, and the underground rumbling often heard in these vicinities seem to give warning of the impending

On June 25, the United States Society of Civil Engineers visited the City of Toronto for the day, by special invitation of the Mayor and Corporation. They came over from Niagara by boat to the and Corporation. They came over from Niagara by boat to the number of about three hundred, and were entertained by a luncheon at the Queen's Hotel, and afterwards taken round the city in special cars provided by the Street Railway Company, and in the evening attended a garden-party given by Sir Casimir Gzowski, President of the Canadian Society of Civil Engineers. The whole party left Toronto by the midnight train for Niagara.

A SUCCESSFUL ARBITRATION.

THE only case in three years where an umpire's services had to be called in to settle a disputed question of wages under the form of arbitration adopted by the National Association of Builders is that, the report on which will be found below and of special interest in view of the present condition of the labor ques-

DECISION OF UMPIRE OF JOINT COMMITTEE, MASON BUILDERS' ASSOCIATION AND BRICKLAYERS' UNION.

I have carefully considered the arguments on each side of the contention between the Mason Builders' Association and the Bricklayers' Union No. 3 of Boston and vicinity, as given at the hearing, Wednesday, June 27, and herewith state briefly the points at issue and the

conclusion forced upon me.

The members of the committee of the Mason Builders' Association The members of the committee of the Mason Builders' Association aver that, in consequence of the present depressed condition of business, building has decreased, values have declined, and that, at the former rate of wages and material, there is no inducement for owners of real estate to venture on new enterprises. They, therefore, ask that the reasonable reduction in wages of bricklayers of four cents per hour, or about ten per cent, be vielded, from date to January 1, 1895. The present agreement is on the basis of forty-two cents per hour and eight hours a day, overtime to be paid for at an added rate of fifty per cent, or "time and a half" as it was expressed.

Collateral arguments and instances were adduced, but the above is the chief ground upon which abatement is asked. Selfish interest was disclaimed, and the lessened wage, the builders believed, by stimulating business, would result in more and steadier work for the bricklayers.

To which the members of the committee representing the Bricklayers' Union rejoined:

First. — That the gravity of the alleged depression was exaggerated,

layers' Union rejoined:

First. — That the gravity of the alleged depression was exaggerated, and they endeavored to show from figures obtained at the office of the Inspector of Buildings that the first four months of 1894 show an increase in the number of completed buildings above the same period of 1893, implying that the hard times had failed to materially injure the building business.

Second — A weighty reason why wages in Boston should not be out

Second. — A weighty reason why wages in Boston should not be cut Second.—A weighty reason why wages in Boston should not be cut was their present low rate as compared with other cities of the country, New York, Baltimore, Indianapolis and Denver paying fifty cents per hour, Philadelphia forty-five cents, St. Louis fifty-five cents, and Cincinnati fifty-six cents, all on a day of eight hours. Buffalo pays thirty-six cents and St. Paul forty-five cents, both on a day of nine hours. Third.—The irregularity of work and the large amount of time lost through enforced idleness—not only from cessation of outside bricklaying in wintery weather, but from unavoidable delay of material and waiting for other mechanics at all times—really reduces the seemingly

high rate of wages to a low average. It was affirmed, and not denied, that the average workman does not earn over \$11 to \$12 per week, or about \$600 per year.

Other contentions there were, but the three given cover the points deserving attention

The amicable spirit of both parties and the evident desire to arrive at a just conclusion were manifest. In the same spirit let me consider the points raised.

I agree with the Mason Builders' Committee that the present depression is serious; that buildings have been put up on speculation in excess of the demand, that new enterprises are checked, contracts are few, and that the large number of empty houses for sale and the numerous idle bricklayers are sufficient to show the situation. I am not convinced, however, that a small abatement of mechanics' wages will stimulate new business.

stimulate new business.

The first contention of the Bricklayers' Union Committee is baseless and misleading. The increased number of buildings completed in the first four months of 1894 does not disprove the great depression, for it is evident that the initiation of these completed buildings antedates the panic. If the dates of beginning and the length of time occupied in the building were given, the statistics would be found valueless in this discussion. discussion.

discussion.

The second objection urged against the cut of wages proposed is the comparative low price paid in Boston when the other great cities are considered. On its face it is a strong point, but conditions are always found on examination to account for the discrepancy. If there were no counter-balancing advantages in living in Boston over living in Cincinnati, it is safe to say that with bricklayers' wages at fifty-six cents per hour in the latter place as against forty-two cents here, there would be a hegira of workmen from this city to that. But the fact remains that, instead, bricklayers are drawn to Boston, and, as appeared in the testimony, from cities where the nominal wage is higher.

An agreement of fifty cents per hour in Denver means nothing when building is paralyzed, as at present, and employment in that line practically suspended.

The third reason for leaving undisturbed the current pay has decided force, correcting the unwarranted conclusion that large wages per hour are necessarily large in the gross, as was satisfactorily explained, by unsuitable weather and inevitable delays from causes beyond the bricklayers' control.

I deem it unnecessary to elaborate further the arguments or pleas advanced on both sides, and proceed to give the conclusion I have

reached.

If the hard times and the dulness in building were caused by excessive wages paid to bricklayers and other similar mechanics, there would sive wages paid to bricklayers and other similar mechanics, there would be ample reason for granting the mason builders' request. But it is evident that such is not the case and that some undefined cause makes the lot of both parties a trying one. Attempting to curtail the earnings of either cannot, therefore, be effective. Moreover, the mason builders have this advantage, they enjoy opportunities for profits on contracts that may furnish a fund with which to tide over such times as the present. The bricklayers have no chance for exceptional profits, and while their wages may be adequate to support themselves and families in prosperous times, they are in trouble when work fails them.

Again, for the mechanic to raise his wages is a hard and slow

them.

Again, for the mechanic to raise his wages is a hard and slow process, and if lowered to meet an emergency involves great exertion to recover them as times improve. They are, consequently, the last item of expense to be deliberately reduced.

It may pertinently be asked, if wages were fixed at thirty-six cents instead of forty-two, who would benefit by the concession? Chiefly the mason-builders, who have unfinished contracts estimated at the higher figure. It would be a transfer without consideration from the laborer to the employer. New contracts would be figured on the cut rate, and unless increased building resulted from diminished wages, nothing would be gained.

My own belief is that the primal cause of the cessation of building centres in the excessive and speculative advance in land values (aggravated by the financial distrust of our national credit) and that the return of better times must be preceded by the decline of the prices demanded for land. When they fall, capital will again be encouraged to invest in new buildings. Land values are the last thing to decline in a panic, but until they do, enterprise is checked and labor waits. The real enemy against whom both builders and employés should unite is land speculation, for he who controls the opportunity controls also the profits of him who uses it.

Convinced, therefore, that no general gain will accrue to the mason builders by the cut of the bricklayers' wage, and that the amount is too small to signify for the stimulation of business, I, therefore, decide that no abatement from the current rate be made.

Permit me to express my gratification, in view of the deplorable

that no abatement from the current rate be made.

Permit no abatement from the current rate be made.

Permit me to express my gratification, in view of the deplorable labor conflict now raging in the West, that you have instituted this fair and reasonable method of adjusting your differences of opinion.

Respectfully, (Signed) WM. LLOYD GARRISON,

Boston, July 6, 1894.

Referee.

PEAT FUEL IN GERMANY.

66 JI HE high prices demanded for coal and other fuel and the severe character of the winters in a severe character. severe character of the winters in recent years, taken in connection with the dull times prevailing on both sides of the Atlantic, have raised the question of obtaining cheaper fuel to a plane of the highest importance."

Such is the introduction to an article that recently made the rounds of the American press. This, in addition to earnest inquiries from the northwest of the United States, addressed directly to me, has caused me to give careful attention to the process by which many parts of the German Empire secure their supplies of that comparatively inexpensive, but yet satisfactory, fuel — peat, or

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Peat, or turf, is used throughout Europe generally, wherever the ordinary cost of its production is not materially increased by cost of transportation. In the large and small cities, as well as in the country districts, it is used for fuel; in fact, in many localities, it is the only substance used for heating purposes. It is used likewise in industrial establishments, but its use in locomotives had to be discontinued in order to prevent danger of forest and field conflagrations.

According to experts on the subject, peat is composed of the following elements, the proportions varying with the respective qualities of the peat: Carbon, 40 to 60 per cent; hydrogen, 4 to 6 per cent; nitrogen, 25 to 35 per cent; oxygen, 1 to 6 per cent; and ashes, 1 to 15 per cent. Of the entire superficial area of Germany, about 5 per cent is covered by peat bogs.

PEAT BOGS OR MOORS.

Peat is the product of decayed organic matter. The main cause of the transformation of vegetable substances into peat (in German, Verterfung) is water of a certain composition and temperature, which, being almost still or flowing slowly in or above the earth permits of the mossy development of swamp plants, and at the same time preserves the latter from total decomposition by reason of exclusion of the air.

These conditions are found to exist more particularly in the temperate zone, where the necessary variations of temperature occur, and where tracts of land are found whose impervious beds lead to continual accumulations of water; while, on the other hand, other portions of territory, with loose and penetrable beds, especially in regions inundated by the overflowing of rivers, are subjected periodically or continuously to an extraordinary saturation.

The various theories that have hitherto been advanced to account for the origin and development of peat bogs generally agree that the moors are the product of a more or less extensive decay of certain plants in a mass of vegetation, which, under favorable conditions as regards locality, climate, and moisture, is continually being renewed in one section and matured in another.

The upper layer of peat or turf, which consists for the greater part of varieties of moss, is, when broken into fragments, a loose, fibrous substance, a mixture of root-fibres, leaves, stems, etc. The intermediate stratum, wherein the decomposition of the various materials has reached a more advanced stage, constitutes the main mass of the peat, often containing the trunks of trees and roots, and is called "peat fiber." The bottom layer, known as "pitch turf" (Pechtorf or Specktorf), consists of a black, compact, pitchy mass, which shrinks rapidly on being separated into small pieces. It has, when cut evenly, a smooth, wax-like surface, contains the greatest amount of nitrogen, and consequently is the most valuable for heating purposes.

Every rational operation of peat bogs or moors must be begun by the draining of the territory to be worked, i. e., the lowering of the water level in the regions immediately to be worked. This draining must be undertaken sufficiently in advance of the working of the peat moor itself, in order that the territory in question may attain the requisite degree of dryness. Even after this has been effected the peat still contains water in quantity equal to from 70 to 80 per cent of its weight, and this remaining moisture is then almost entirely removed by successive processes of drying in the air, manipulation with machinery, or subjection to artificial heat. Until within the last few years manual labor has been employed to work these peat bogs, but a very ingenious machine has been invented to take its place. This machine consists of three lancet-like knives, set in a square prism with open front, which by operation of a toothed rod, cogwheel, and crank, are sunk into the peat, cutting out a corresponding square prism of peat, which is received upon a horizontally working shelf is removed by a simple reversing of the above-mentioned contrivance. These machines are manufactured by the following firms: R. Dolberg, Rostock (Mecklenburg); C. H. Hall, Berlin; and Charles Muellers, Demmin (Pomerania).

Another method consists in plowing and harrowing the bog or moor by the use of steam power and wire cables, the material for which is manufactured by Heinrich Lanz, of Mannheim.

The process of drying the peat or turf, in so far as small moors are concerned, consists simply of exposure to the open air. When extensive territories are worked, artificial drying is, of course, resorted to, and the expense involved in the latter operation is by far the greatest incurred in the production of peat.

far the greatest incurred in the production of peat.

In Germany the following kinds of peat are known: (1) Cut peat (Specktorf), which is cut into the form of bricks by hand spades or special machines; (2) moulded peat, which is produced by cutting the peat mass into irregular pieces, mixing it with water and then moulding it into the respective forms; (3) machine or pressed peat, the result of pressing the turf, after previous separation, into pieces and drying in ovens in suitable moulds. In the category of "machine peat" is also included the so-called "ball peat" (Kugeltorf)—globes of turf of about four inches in diameter, made by passing the turf pulp through specially contrived appliances. In the peat works at Haspelmoor, and Kalbermoor, in the neighborhood of my district, the moor to be worked is first freed from vegetation, levelled, ploughed, and harrowed, and the loosened peat broken, so as to be exposed to the action of the air. It is then gathered by means of a kind of snow-plough, brought to the separating machine, taken thence to the drying oven and the press, whence it issues in the shape of smooth, shiny, dark-brown bricks.

A machine (the Schlickeysen system) in operation at Haspelmoor produces, provided suitable raw material is used, from 10,000 to 15,000 bricks in ten hours. Another machine (manufactured by Henry Clayton, Son and Howlatt, London), requiring 6 horsepower to operate it, can produce from 60,000 to 100,000 bricks per day.

Interested parties, i. e., those contemplating the construction of peat works, should never lose sight of the fact that from the very beginning every prolonged and expensive kind of manipulation is to be avoided. It is unprofitable to employ any expensive mode of operation in the production of peat, as it naturally comes into competition with coal, which contains a greater amount of combustible ingredients. The cost of constructing a plant for coal demands a considerable outlay in the first instance, but the subsequent actual production resolves itself into the mere process of mining.

Mr. Hugo Classen, of Ansbach, Bavaria, engineer and technical expert on the subject of peat production, has superintended the construction of several of the most extensive peat-works in Germany, and consequently is regarded as an authority in the matter. He has, at my request, placed himself at the service of those who desire further information, and recommends the following works as especially adapted for the preliminary study of the question: A. Hausding's "Industrial Production and Use of Peat," published by P. Parey, Berlin; Dr. A. Vogel's "Practical Guide for Estimating the Comparative Values of Peat Moors," published by Fleischmann's Publishing House, Munich; Dr. v. d. Goltz's "Handbook of the Entire Land Culture" (Vol. iii), published by H. Laupp, Tuebingen; and Drs. E. and K. Birnbaum's "Peat Industry," published by Fleischmann's Publishing House, Munich.

PEAT COMPARED WITH OTHER FUEL.

The experiences of recent years, embracing numerous instances of failure, have demonstrated the expediency of entrusting the constructing of peat-works only to competent and experienced experts.

The following figures, indicating the relative powers possessed by various kinds of fuel for converting water into steam (kinetic power) will render it possible to institute a comparison between peat and other fuels: one kilogram (2 pounds) of wood converts into steam 3.4 kilograms of water; one kilogram of brown coal, 3.5 to 4.9 kilograms of water; one kilogram of "cut peat," 2.8 to 4 kilograms of water; one kilogram of "machine peat," 4.5 to 5 kilograms of water; one kilogram of hard coal, 7 to 8 kilograms of water; one kilogram of of hard coal, 7 to 8 kilograms of water; one kilogram of of kilograms of water; one kilogram of poor coal, 4 to 6 kilograms of water.

It is reasonable to estimate, on an average, that 100 pounds of peat are equal, in respect to the really available heating capacity, to 50 or 60 pounds of so-called "pit" coal (hard coal). In the peatworks at Haspelmoor which are known to be a paying enterprise, the total cost of producing 100 pounds of air-dried peat amounted last year to 36 pfennigs (8.6 cents) which low figure was secured, however, mainly by reason of the comparatively low rate of wages and the inexpensive manner of living prevailing in that neighborhood.

In Germany the relative cost of peat, as compared with hard coal, is as follows: one hundred kilograms (220 pounds) of good Zwickau hard coal cost at the mine 1.20 to 1.62 marks (28.56 to 38.56 cents), while the cost of production of the same quantity of peat amounts to from 0.30 marks to 1.40 marks (8.14 to 33.32 cents), according to quality.

PEAT FOR OTHER THAN FUEL PURPOSES.

Besides its use as fuel, peat is turned to account on this continent as a fertilizer and as building material, it being used successfully as a filler for vacant spaces, separating layers for waterworks, reservoirs, ice houses, etc. By means of a process patented by a tanner in Mayence, it has also been made to do service in tanneries. The waste or superfluous particles of peat, known as "peat dust," have recently been brought into extensive use as a material for fitting up and preserving odorless vaults, an innovation deserving strong commendation, especially in localities where the sewerage is inadequate.

In Europe the countries that possess the most extensive peat bogs or moors are in Ireland, Scotland, Sweden, Norway, Denmark, eastern and western Russia, Holland, Austria, Hungary, Prussia, Bavaria, Hanover, Oldenburg, and Mecklenburg. Hanover and Mecklenburg alone have from 149 to 150 square miles, and Bavaria has 22 square miles of peat moors. The territory of the United States embraces very extensive peat bogs, and local experts are of the opinion that the operation of the requisite plant for producing the article, if undertaken by competent parties, would be especially profitable in those parts of the United States where distance from the coal-producing centres places the price of the better kinds of coal beyond the means of persons in moderate circumstances.

LOUIS STERN, U. S. Commercial Agent. Bamberg, February 20, 1894.

FAILURE OF CAST-IRON COLUMNS.

If there is one situation in which, under certain conditions, the architect and the engineer feels himself thoroughly justified in employing cast-iron, it will be universally conceded that it is in the form of the column or pillar. It matters little or nothing, so

far as the principle is concerned, whether the section be that of the other shape, which might suit the particular circumstances of the case. It is exceedingly rare that any instances have occurred in which cast-iron has been known to fail when subjected to the proper which cast-iron has been known to fail when subjected to the proper and fair amount of stress, both in character and amount, while acting as a vertical support to a vertical load. When, therefore, the failure of the material takes place under all these conditions favorable to the stability and durability of the column, especially when as in the example we intend describing, the failure is on a scale of considerable magnitude, it not only becomes endowed with a large amount of interest, but it carries with it a lesson which is worth the attention and consideration of all those — as the majority of our readers are — who are engaged in works of construction. It was an one of the Austrian railways near Fibenschitz in Moravia on attention and consideration of all those—as the majority of our readers are—who are engaged in works of construction. It was on one of the Austrian railways near Eibenschitz, in Moravia, on the viaduct over the river Iglawa, that the cast-iron columns supporting the superstructure proved defective. The viaduct itself consists of six spans of 200 feet each, of lattice girders continuous over the intermediate piers. Each pier is built up of four cast-iron columns, having a maximum height of 90 feet braced longitudinally, diagonally, and transversely by channel irons, the whole being strongly bolted together. The columns are cylindrical, having a diameter of 1 foot 7 inches, and a thickness of $1\frac{1}{2}$ inches, and are cast in lengths of 16 feet 5 inches, with internal flanges to take the connecting of 16 feet 5 inches, with internal flanges to take the connecting bolts. A rake or batter of 1 in 10 was given to the piers, the separate columns of which were securely bolted down to the foundations of masonry and concrete by holding down bolts 14 feet in length, and $2\frac{1}{2}$ inches in diameter. Over the piers the ends of the girders were supported upon a short bearing-beam, which was pivotted upon the pin of a roller bed-plate resting over the wroughtiron cap which united the columns of the pier.

privotted upon the pin of a roler bed-plate resting over the wroughtiron cap which united the columns of the pier.

It is not necessary to carry the investigation very far, before arriving at a conclusion, which if not completely decisive, will afford, at any rate, very valid reasons for the pillars evincing the unmistakable signs of weakness which characterized their behavior not very long after they were erected. In the first place, the length of each separate column is of a dimension sufficiently great to allow of a very considerable amount of vibratory action. This oscillation, or tendency to lateral deformation, would occur notwithstanding the efficiency, or as it might be deficiency, of the cross-bracing between the individual columns constituting the entire pier. It must also be kept in view, in considering the subject, that for the whole of this height of 90 feet the interior of the pillars was filled with concrete, and we have this important distinction to bear in mind. It is, that while the material of the columns, that is, the cast-iron, by reason of each column being cast in separate lengths of about 16 feet would yield a little to any swaying or rocking movement, such as no doubt takes place in a pier of the height of 90 feet, the concrete inside would not. This difference between the behavior of the cast-iron forming the hollow column and the material inside it which may be considered in the light of a core inside a casting, unquestionably led to the incircular activities of the behavior of the benefit of the control of the cast in the light of a core inside a casting, unquestionably led to the incircular activities of the behavior of the cast in the light of a core inside a casting, unquestionably led to the incircular activities of the behavior of the cast in the light of a core inside a casting, unquestionably led to the control of the cast in the light of a core inside a casting the cast in the light of a core inside a casting the cast in the light of a core inside a casting the cast in the li considered in the light of a core inside a casting, unquestionably led to the incipient splitting, or the development of the longitudinal cracks or fissures which were observed in the defective columns. At first these vertical or longitudinal cracks were barely perceptible; but as the operative cause which originally gave rise to them continued to act, excited by the vis viva of every passing train, they speedily became so apparent that the safety of the whole structure was seriously imperilled. It is very probable in analyzing the whole circumstances of this very peculiar, if not altogether novel, constructive defect, that the different rates of expansion and contraction of the cast-iron column itself and the concrete in the interior may have had something to do with the fissures in the ironwork. Both causes were at work, threatening first the stability of each separate column, and ultimately as an unavoidable sequence, that of the whole pier. These defects in the cast-iron columns became so serious that all the piers were removed and replaced by substitutes of wroughtiron — a change for which we are not aware there has hitherto been any precedent. — F. C. in The Building News.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

PORTE COCHÈRE TO HOUSE OF CORNELIUS VANDERBILT, ESQ., 58TH ST., NEW YORK, N. Y. MR. GEORGE B. POST, ARCHITECT, NEW YORK, N. Y.

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[Gelatine Print.]

CORRIDOR OF THE BATTERSEA POLYTECHNIC, LONDON, ENG. MR. E. W. MOUNTFORD, ARCHITECT.

INTERIOR OF LINCOLN AND LINDSEY BANK. MR. W. WATKINS, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

CITY BUILDING AND QUALIFIED ARCHITECTS.

PHILADELPHIA, PA., July 10, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

To the Editors of the American Architect:—

Dear Sirs, — I would like to draw your particular attention to the enclosed article. I feel as if it pointed out, and for the first time so far as I am aware, the one method by which architecture can be raised to the position of a profession. No legislature will ever pass a general statute, but a provision that all building plans, or those costing over a certain sum, presented to the Building Department of any city, should be signed by an architect, would be so natural a development of the present building laws, that I think there is a chance of its being adopted in our more progressive States. Very possibly this suggestion has been made before, but most of the proposals for architecture as a profession, which I have seen, have been vague and would interfere with what might be called the fringe and outskirts of the work of an architect. They involve, in short, the creation of a new profession by law. The law cannot do that, but it can provide that at the point where the work and profession comes in contact with Government machinery, a certain standard of qualification should be required, cation should be required,
Yours sincerely,

TALCOTT WILLIAMS.

ARCHITECTS AND ENGINEERS.

A FREE entrance to all occupations was the tendency of all our legislation up to thirty-five years ago, when Massachusetts and other States repealed the restrictions on admission to the medical profession, and in some States, like Indiana, all citizens were given the right of practising law before the courts without an examination. For the past twenty years the tendency has been reversed. Entrance to the medical profession has been attended with stricter examinations and this has also been true of law in all the Middle and New England States, as well as in some States of the West.

Architecture and engineering are extremely likely to be the past

has also been true of law in all the Middle and New England States, as well as in some States of the West.

Architecture and engineering are extremely likely to be the next two professions which insist on a recognized status and legal qualifications. Among architects there has been for some time a strong movement in behalf of a required examination before practising, and a correspondent in the Engineering News urges that engineers be required to show a certificate of ability before being allowed to take up engineering. The proposal made is that the law require every set of building plans passed by a city building department to be signed by an engineer or architect who can show the certificate of a civil-service examination similar to that required by the United States Government.

As three-fourths of the plans submitted in New York have to be returned for amendment and a very large share of those which pass the building departments in our large cities are defective, a provision of this kind would undoubtedly be to the public interest. Public opinion is probably not ready for legislation which would prohibit the practice of architecture or engineering by unqualified persons; neither would it be easy to define these qualifications, but it would be possible to require all plans for buildings in our cities to be signed by some one whose qualifications had passed a public examination, because this would be simply an extension of the present requirement, recognized in our building laws, that a certain amount of technical knowledge is necessary in order adequately to plan a building.

This would reduce to a minimum the interference with private and personal rights and privileges. Architects and engineers could call themselves what they pleased and carry on their calling as they chose. The law would only require that all city building plans should carry proof that they were drawn by a competent person. In fact, this is

the principle adopted in dealing with the legal profession. Any one is at liberty to give legal advice or draw legal papers, and this liberty is freely used to the great profit of lawyers later; but when a man appears in court he must be qualified to do his work. Why should not the public, while leaving the utmost freedom to architects, engineers, and builders, as now, insist that all plans drawn under the building law shall be attested by the signature of a man qualified to draw them?—



Boston, Mass.—Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts.

New York, N. Y.—Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters—William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.



THE CZAR'S MEMORIAL CHAPEL. - The Czar and Czarina have returned to Peterhoff from Borki (between Kursk and Kharkoff) where the consecration of the new Church of the Saviour in commemoration of the preservation of the Russian imperial family in the terrible railway accident of November, 1888, took place on Tuesday morning, June 26. There were present crowds of officials, officers and visitors from Kharkoff and the neighborhood, and a number of deputations representing the nobility, the burghers, the merchants and the peasantry of the district. Archbishop Ambrosia, at the head of the clergy in attendance, greeted his Majesty in a royal speech. After the consecration of the altar, a procession of the Cross, and prayers, the imperial party took tea in a pavilion erected for the nobility and then departed for St. Petersburg. Of all the numerous shrines, chapels and icons set up all over the empire to commemorate the providential escape of the Czar at Borki, this one is the most beautiful aud striking. The memorial consists of two structures, the one a chapel or oratory built into the side of the railway embankment just where the dining-saloon car containing the Czar and his family was pitched by the accident, and the other a magnificent church in the Muscovite style of the seventeenth century, capable of holding about 700 persons, built a short distance from the embankment out on the open steppe, on the spot where their Imperial Majesties helped to alleviate the sufferings of those who had been injured. The church is now surrounded by a park of about eighteen acres, in which have been planted 70,000 trees. The entire work has cost about 250,000 rubles (£25,000), collected by public subscription, besides the gifts of land, church ornaments and paintings. The church has the form of a high cupola surrounded by six conical towers, the façades being in yellow bricks, with elaborate ornamentation in which the double-headed eagle plays a conspicuous part. A finely-ornamented iron staircase leads down from the railway on either side of the chapel. Within the latter are black marb turned to Peterhoff from Borki (between Kursk and Kharkoff) where the consecration of the new Church of the Saviour in commemoration of

Vagaries of Lightning. — The annual average of lives lost by lightning is about 200. Such catastrophes always occur in the five months from April to September, while more than two-thirds of them take place during June and July. The annual average value of property destroyed by lightning during the eight years ending with 1892 was \$1,500,000. In 1890 New York was the most unfortunate State with respect to property damaged by lightning. Pennsylvania and Ohio followed hard after, both of them away up in the hundreds of thousands of dollars, while Kansas reports only one fire worth \$400 and Mississippi two, which averaged \$75 apiece. The following year Pennsylvania led the way, closely followed by Missouri, Ohio and New York, with Delaware, Louisiana and Rhode Island at the opposite end of the report. In 1892 New York was again at the head, having lost nearly twice as much as in any of the other years. Next in order were Pennsylvania, New Jersey, North Dakota and Ohio. Florida and Mississippi lost the least that year — \$325 each. During the nine years ending with 1892, 2,335 barns, 664 dwellings and 104 churches were struck by lightning. The destruction of barns is usually greatest in New York, Pennsylvania, Massachusetts, Indiana and New York head the list with an equal number. Connecticut and Maine come next, and are also paired. The Weather Bureau asks for twenty years — of which eight years have passed — in which to determine from statistics "whether there exists a periodicity in the number of lightning strokes." The Bureau has discovered, however, that lightning does sometimes strike twice in the same place. The main object is to find out what construction of buildings is most liable to destruction by lightning, and to what extent the character of the land where buildings are located influences the frequency of lightning strokes. Some things have been proved already. The danger to a country building is five times as great as to one in the city, and a barn is four times as likely to be struck as a dwelling-hous

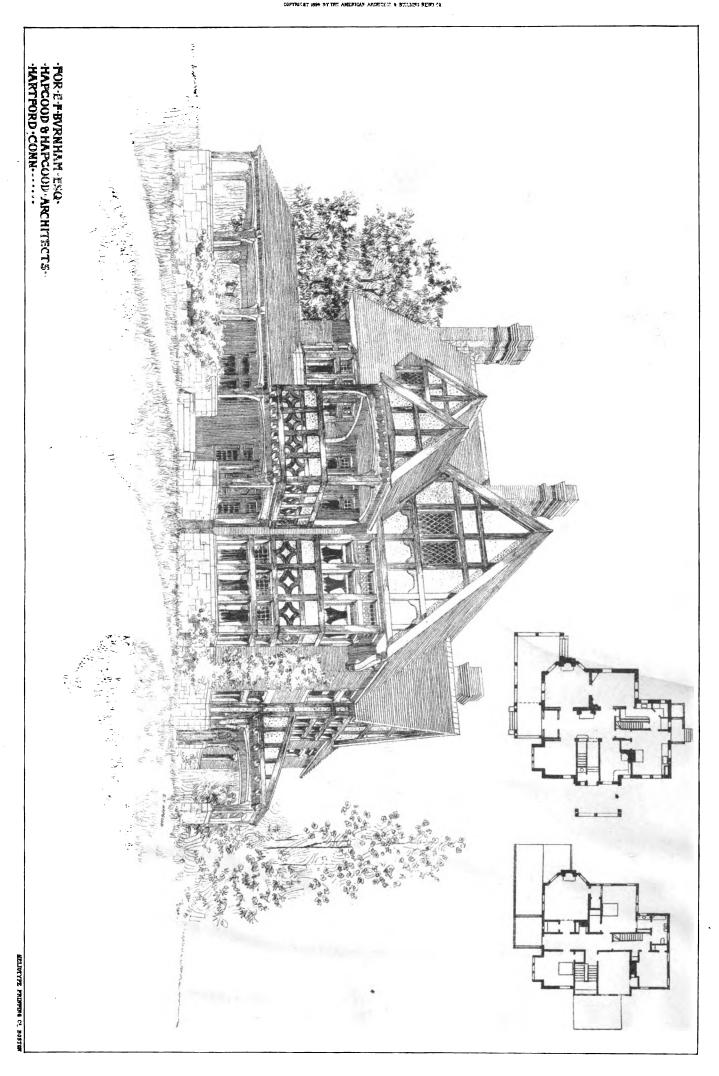
A German House Tree.—One of the most curious trees in Germany stands on the left bank of the River Oder, in Ratibor, Silesia. It is a maple, at least 100 years old, which has been twisted and cut into a sort of circular two-storied house. A flight of steps leads up to the first level, where the branches have been gradually woven together so that they make a firm leafy floor; above this is a second floor of smaller diameter, formed in the same way; and the ends of the branches have been woven into solid walls, and cut so that eight windows light each of the apartments. Below the first floor, at the level of the second, and at the top of the tree the boughs have been allowed to grow out naturally, while the intermediate walls and the edges of the window-like openings are kept closely clipped.—Philadelphia Press. A GERMAN HOUSE TREE. - One of the most curious trees in Ger-

A New Topographical Map of Baltimore.—The topographical survey of Baltimore, which has been going on since June of last year, is one of great importance to the city. The field work will probably be finished in September. The cost of the undertaking will be considerably more than the \$125,000 which was originally appropriated. It will be sufficient for the survey, but the drawing and mounting of the property-maps will also involve a large outlay. It will take several years to complete them. The topographical map to be prepared will be of great use in the future. The elevations will be shown by contour lines at five-foot vertical intervals. A skeleton map will be made with the contour lines and showing streets, alleys, roads, parks, streams, conduits, public buildings and railroad lines. The map will be on a scale of 500 feet to one inch, and will be about seven feet square. The property division of the survey is another important part of the work. The property-map which will be prepared will show the location of every piece of property in the city, its dimensions and character, the The property-map which will be prepared will show the location of every piece of property in the city, its dimensions and character, the material used in the construction of every building and the purposes for which the building is used, the dimensions of every lot and its relative position regarding streets and roads, and the name of every property-owner, if possible. Such a map will be invaluable to the Tax Department. — N. Y. Evening Post.

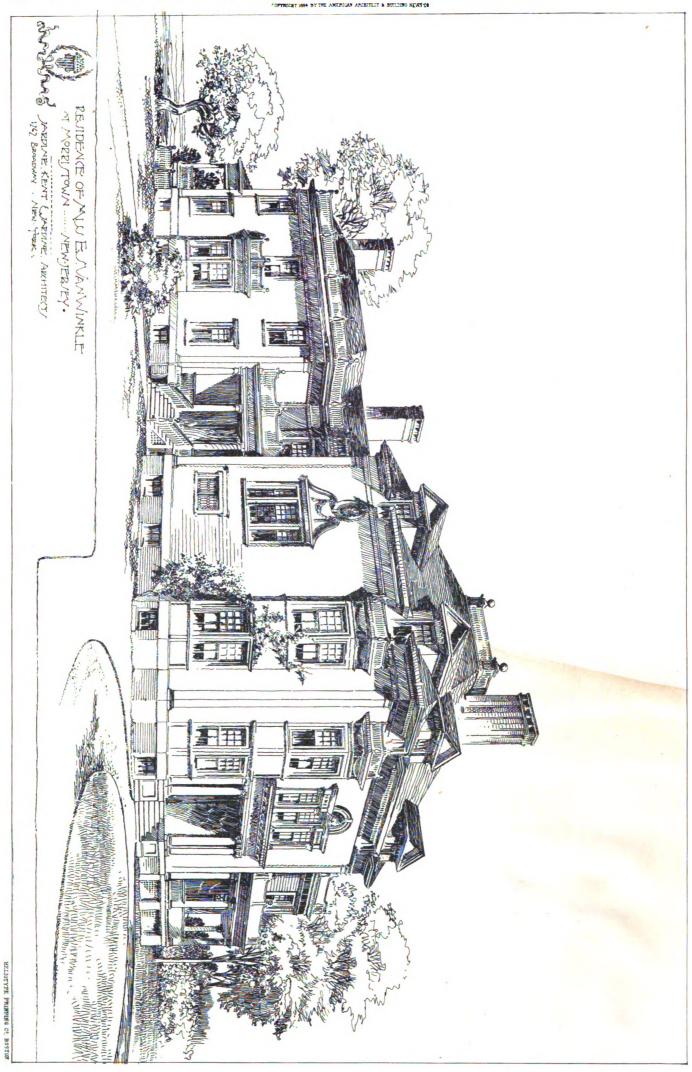
Department. — N. Y. Evening Post.

Raising a Bridge. — The raising of a bridge in Switzerland upon the line of the International Railway, from Paris to Vienna, has attracted considerable attention from the methods pursued. The occasion for the change, says Locomotive Engineering, was that the river crossed — the Rhine — had lost in the sectional area of the passage between the piers, about 25 per cent in thirteen years, owing to the deposition of gravel and sediment, while the high-water level had risen to such an extent as to pile floating débris six feet deep on the bridge floor in times of flood. The alterations included some reënforcements, besides the raising of the whole structure about five feet. The bridge was continuous over a central pier, and had two main vertical posts there and four vertical end posts. To each of these posts an inclined strut was attached in a transverse vertical plane, presenting a surface for the top of an hydraulic jack to act upon. Eight special 100-ton jacks were used, with an eight-inch stroke and a working-pressure of 400 atmospheres, the piston being nearly 0.7 in diameter. The fluid used was a mixture of water, alcohol and glycerine. Sixteen men operated the jacks, their movements being synchronized by a code of signals, designed to secure uniformity of action. The bridge was raised a foot or two by short lifts, followed by thoroughly blocking, and then building under one course of cut-stone masonry. The total load was 546 tons, and the maximum load on a single jack was eighty-seven tons. The bridge was raised in four stages during intervals between trains. The longest interval between trains was about two hours. The weight of trains was rigidly restricted during the time the bridge was undergoing repairs, and their speed was limited to three miles an hour in crossing the bridge. In addition, a special block system was organized upon that section of the line upon which the bridge is located, so that operations could be suspended, and the track restored five minutes before

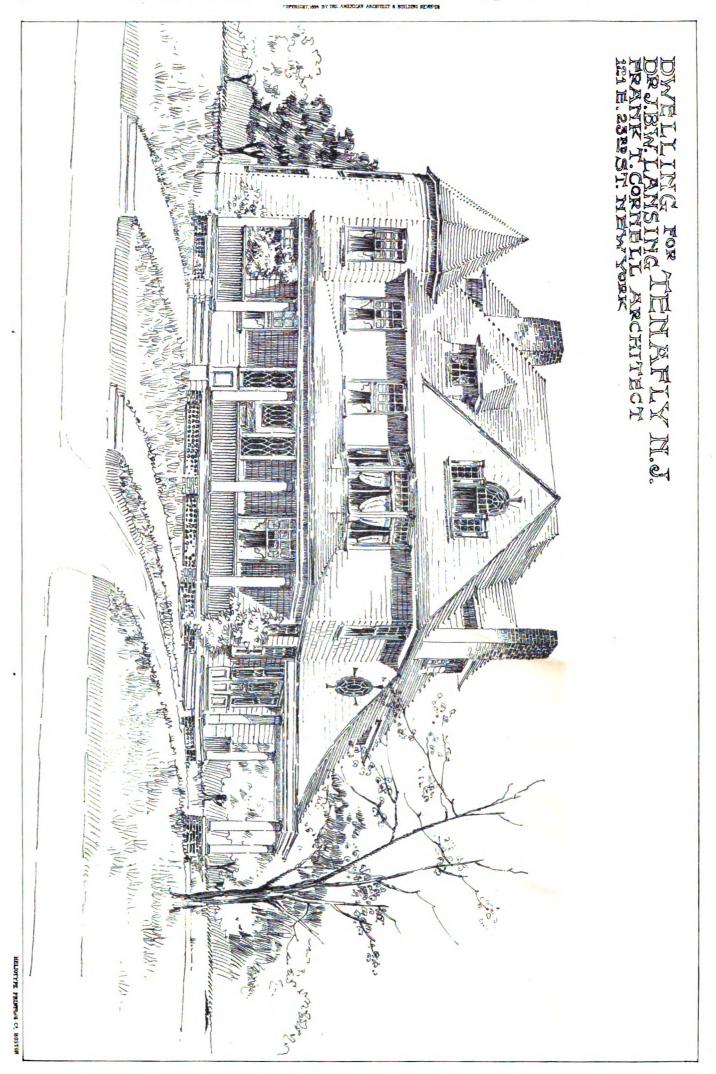
Sculpture for the Congressional Library. — The sculpture to be used as decorations within and without the new Library of Congress is to be in complete and in low relief, and to consist of statues and busts in bronze and granite; also in bronze-relief doors and many large symbolical statues in plaster. The latter will decorate the inner dome, where they will be put about sixty feet from the marble floor of the central hall. They are to be figures 10½ feet high, and presumably colored to go with the stucco ornamentation of the vault. They are eight in number, and will rise against the spandrels between eight arches. John Q. A. Ward will model "Poetry"; Augustus St. Gaudens, "Art"; George Barnard, "Religion"; Bela L. Pratt, "Philosophy"; Daniel C. French, "History"; John Donoghue, "Science"; Paul Bartlett, "Law"; John Flanagan, "Commerce." Bronze doors, three in number, are said to have been given to Olin L. Warner, Frederick MacMonnies, and George Barnard. The inner dome has a balcony running round it, about thirty-five feet from the floor. Here are to stand sixteen bronze figures of famous men, each 6½ feet high. Daniel C. French will model Herodotus; Louis St. Gaudens, Homer; Frederick MacMonnies, Shakespeare; Charles Niehaus, Moses and Gibbon; John Donoghue, St. Paul; John J. Boyle, Plato and Bacon; George Barnard, Michael Angelo; Theodore Bauer, Beethoven; C. E. Dallin, Newton; Herbert Adams, Dr. Henry; F. W. Ruckstuhl, Solon; George E. Bissell, Chancellor Kent; Paul W. Bartlett, Columbus; and H. H. Kitson, Fulton. These names, and the names of sculptors, appear to have been shaken up in a bag and drawn out at haphazard. But there is this to be noted: no really questionable sculptors have been included in the orders, so that in the majority of cases we shall probably get fairly good works. The least known are Messrs. Bela Pratt and John Flanagan, young men who have worked with St. Gaudens. The windows in the balcony on the façade are to be decorated with nine colossal granite busts. Herbert Adams will model t SCULPTURE FOR THE CONGRESSIONAL LIBRARY. -

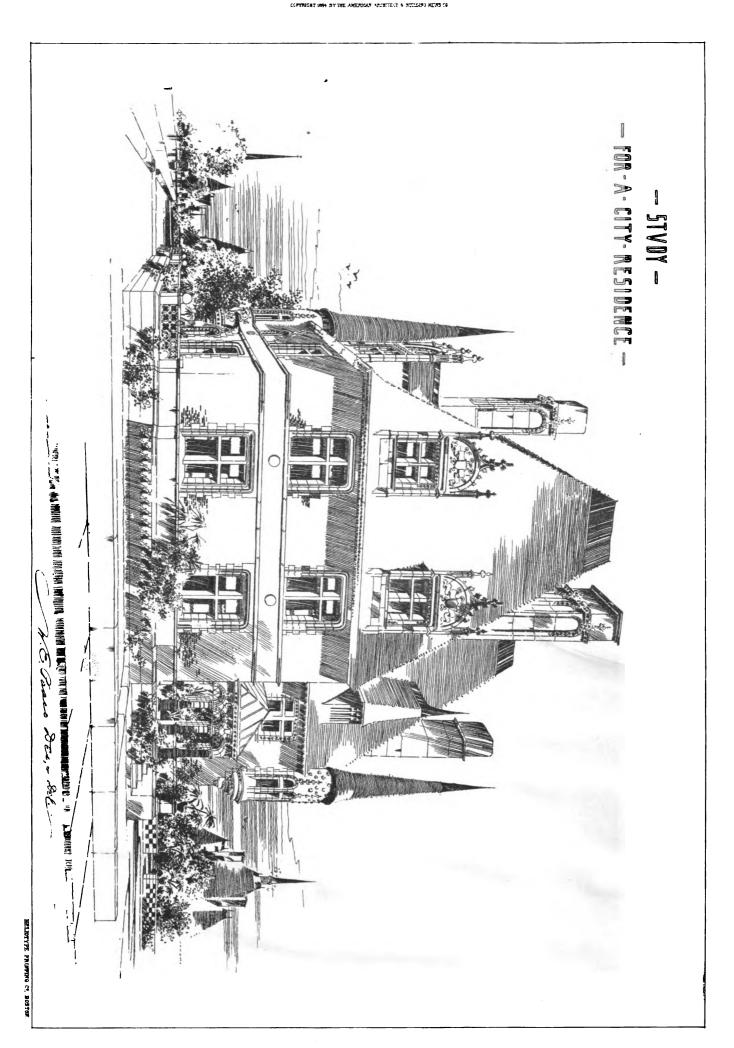


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AUGUST 11, 1894.



he McKaig Public Buildings Bill.—Strike on the New York Schoolhouses.—A Fire extinguished by the Fall of a Rooftank.—The Pension and Accident Funds of French Railways.—Other Ways in which the Railway Operatives are cared for.—Ingratitude of the Proletariat.—The New Science Review.—An Architect loses his Suit for Fee because the Defendant County could not Legally incur the Debt. The McKaig Public Buildings Bill. -

ILLUSTRATIONS: —

Main Hall of Suffolk County Court-house, Boston, Mass.—
The New City Stables, Somerville, Mass.—Galilee Porch and Western Towers of Trinity Church, Boston, Mass.—Trinity Church, Boston, Mass., showing Proposed Alterations.—The Peck School, Worcester, Mass.

**Additional*: The Wooded Island and Overlooking Buildings, World's Columbian Exhibition, Chicago, Ill.—The Bureau of Public Comfort, World's Columbian Exhibition, Chicago, Ill.—Battersea Polytechnic: General View, London, Eng.—Battersea Polytechnic: The Hall, London, Eng.

Communication:—The Wisdom of the Serpent.**

Exhibitions.

Notes and Clippings.**

ME most interesting professional news of late is the favorable report, unanimously returned by the House Committee on Public Buildings and Grounds, on what is known as the McKaig bill, providing for the securing of designs for public buildings. This bill, as we have already explained, is virtually the one drawn up by a volunteer committee acting in conjunction with the American Institute of Architects, and submitted to the Committee on Public Buildings and Grounds, at whose suggestion it was modified in certain respects. According to the newspaper reports, there is a strong feeling in favor of the bill in both houses of Congress, and it is believed that it may be passed without difficulty. so, a long step will have been taken toward the position which this country is destined to occupy sooner or later - at, or very

near, the head of the artistic world.

HE usual contemptible trick of the New York Walking Delegates, to order strikes, on some ridiculous pretext, on school-houses undergoing necessary repairs during the vacation, was played the other day, and the dignity of the walking magnates is again to be enforced at the expense of the poor school-children and their parents, as a strike now means, as the delegates well know, delay in opening the schools for the fall term. Meanwhile, two-thirds of the men in the building trades in New York are said to be idle, the outgoing steamers are full of emigrating mechanics, and misery stares the unfortunate strikers in the face, but "the dignity of labor" has to be upheld, no matter at what cost to people who cannot, or dare not, help themselves.

FIRE was extinguished in a curious way in New York the other day. A building on Broome Street, next to the corner of Broadway, was discovered to be on fire, the smoke pouring out of the fifth-story windows. An alarm was sounded, and the engines were soon on the ground, but, by that time, the heat was so intense that the firemen could not enter the upper story at all. A line of hose was taken up to the roof, but the fire was rapidly gaining power, and it seemed probable, not only that the roof would soon go, but that the adjoining building would be set on fire. Suddenly, a crash was heard in the burning rooms, and the firemen who were holding the hose in the rooms below were nearly washed off their feet by a flood of water which poured down the stairs and through the ceiling. The crackling of the flames ceased, and the firemen, seizing the opportunity, broke into the upper rooms, and soon extinguished the half-quenched embers of the

fire. They then found that a water-tank had been supported on a wooden frame, three feet or so above the fifth floor. woodwork of the frame had been so nearly burned through as to let the tank fall, and pour its contents on the floor.

LE GENIE CIVIL gives some interesting statistics in regard to the pension and accident funds for railway employés, which are now established on many of the foreign roads as well as on some of our own. In France, the plan followed by the great railways seems to be, generally, the addition, out of the company's funds, of a certain sum annually to the amount raised by the employés themselves. Thus, on the great railway of the West, the employés subscribe annually four per cent of their wages, and, if their salary is increased, the amount of the increase for the first month, to a fund, which is invested in a sort of endowment trust, carried on by the Government. This subscription, which is voluntary on the part of the employés, no one being obliged to pay, but no one being entitled to share in the benefits of the fund unless he is a subscriber to it, brings in a large annual sum; but the Company, wishing to provide still more comfortably for its old servants, has, until recently, added, every year, a sum equal to five per cent of all the wages that it paid, thus much more than doubling the pension fund. The Company's contribution is invested separately from the rest, so as to give additional security to the income from it. Unfortunately, in France, as elsewhere, the profits of all investments have been much diminished of late, owing in part, no doubt, to the efforts of the esteemed orators who denounce capital and interest alike as "robbery of the workingman," and the poor workingmen whose last days are to be supported by the interest on their savings have to suffer accordingly. In 1892, the Company of the West, finding that the interest paid by the Government trust on the workmen's savings had been reduced from five to three per cent, and believing that the income so derived would be insufficient to maintain in decent comfort the aged and infirm subscribers, most generously and nobly voted to raise its own annual contribution from five per cent on the total of wages paid to eight per cent. It thus not only pays into the pension fund twice as much as is contributed by the men themselves, but, to provide immediately for current needs, its Directors voted to make the increase from five to eight per cent retroactive, dating it from the first of January, 1891, and to pay the extra three per cent for 1891, amounting to more than three hundred thousand dollars, immediately into the fund. This great act of humanity was carried out about two years ago, by a corporation which was then, and is still, struggling against business depression and adversity to pay a small dividend to its owners; yet not a day passes without the public being informed that this, and similar corporations, are "the incarnation of soulless greed;" that "labor will soon have its grip on the throat" of the people who so wisely and generously provide for the inevitable needs of their less careful brethren; and that all railway companies are legitimate objects of assault and plunder by every one who can get a chance at them.

ET us see in what other ways the great French railroad companies "suck the blood" of the people who work for them. The same Company of the West, besides paying more than eight hundred thousand dollars a year into its employés' pension-fund, makes loans regularly, to be repaid by instalments without interest, to honest employés who need the money temporarily; it gives a specified extra percentage of wages to its men stationed in towns where the cost of living is high, increasing the percentage in proportion to the number of children or dependent relatives in each man's family; it provides employment, so far as it can find work that they can do, for the widows, wives and children of its employes, and increases every year the number of places that they can fill; and, in addition to all this, it reserves a considerable sum each year, with which it makes presents outright to the most faithful and deserving men. The great Paris-Lyons-Mediterranean Railway Company does, if possible, even more for its vast working family. Like the Pullman Company, it has built a large number of houses, near its workshops, which it rents at a low

price to its men; it has advanced money for the establishment, near its Paris shops, of a great restaurant, which furnishes more than three hundred meals a day to its workmen and their families; it maintains three schools for the children of its employés, and is about to add a fourth; it provides two daynurseries, where nearly two hundred babies are constantly cared for; it maintains a sewing-school for young girls in Paris, where the daughters of its men are taught to sew, and where work is brought them to do, without sending them around the city in search of employment; it carries on, at Villeneuve-St.-Georges, a convalescent home, where its employes, or members of their families, are received, after their discharge from the hospitals, and kept until good care and a pure atmosphere have restored them to health; and it maintains one hundred and forty orphaned children of its employés in different establishments. Besides all this, it allots a specified addition to the pay of its men who have young children, or young or infirm relatives, either of their own or their wife's family, dependent upon them; and, like the Company of the West, it increases the pay of men obliged to live in the expensive towns. To provide for pensioning the aged, and assisting persons disabled from any cause, it has for nearly forty years maintained a regular fund, which, at present, is kept up by an assessment on its employés of four per cent on their salaries, and a contribution by the Company of ten per cent on its total pay-roll. The capital, if we may use that proscribed word, now invested in this pension-fund amounts to more than twenty million dollars, and nearly sixteen hundred thousand dollars are paid out annually in pensions.

T is hardly necessary to say that the other French companies have not been slow to imitate the example of the two great roads; and the amount of money annually spent by stockholders and directors of French railway companies for the benefit of those whom they employ must be something enormous. That we wholly approve of such expenditure, we cannot say. The example of the sour ingratitude with which the Pullman workmen accepted what was done for them shows that philanthropy, where workmen are concerned, needs to be tempered with a great deal of discretion; but the treatment which inspires in the cold Northern spirit only additional arrogance and venom would have a very different effect upon the generous and warm-hearted French; and we do not doubt that the thoughtful kindness of the French railway companies to their dependents is rewarded by such loyalty as only Frenchmen seem capable of.

E take pleasure in welcoming to the field of scientific literature the first number of the New Science Review, a quarterly, issued by the Transatlantic Publishing Company, of New York, Philadelphia and London. As usually happens with new serials, the first number is a little miscellaneous in its contents, which range from an unintelligible account of Mr. Keely's recent inventions, by Mrs. Bloomfield Moore, to an interesting study of violin-making, by Mr. Edward Heron-Allen, and an important paper, by Major-General Drayson, pointing out that the glacial epoch, or epochs, as at least two of them are traced by geologists, must have been due to the periodical variation of the obliquity of the ecliptic, which oscillates, in a period of about thirty-one thousand six hundred years, in such a way that when the obliquity is greatest, the Arctic Circle, or "line of the midnight sun," as it may be popularly called extends twolves as it may be popularly called, extends twelve degrees, or nearly eight hundred miles, farther from each pole than it does at present. This would involve almost the trebling of the area of the two arctic zones, and it is quite conceivable that the result might be the advance of ice-fields southward to the latitude of Richmond or Marseilles, which geology shows to have taken place. Astronomy, however, shows us, what geology has not been able to discover, that the last maximum extension of the Arctic Circle was about 13,500 B. C., and this may be taken as approximately the date of the culmination of the glacial epoch. It is well known that human bones, with fragments of utensils, and drawings, scratched with much cleverness on pieces of reindeer bone, have been found in caves, the opening of which has been subsequently filled up by glacial drift; so that people who were acquainted with reindeer, and could draw pictures of them, must have lived in France, where the caves were discovered, long before 13,500 The curious connection of this periodical variation with the formation of coal beds is also pointed out; but readers must look in the article itself for further particulars.

'N a suit against a county for an architect's fees, some remarks were made by the judge, which all architects should particularly note. Mr. I. Hodgson, Jr., a well-known member of our profession, was employed, by order of the County Court of Multnomah County, Oregon, to prepare plans, specifications and so on, for a court-house; and the Court subsequently ordered that Mr. Hodgson should be employed as architect and general superintendent of the building, at a compensation not to exceed five per cent on the cost of the building. The county judge and the architect both signed an agreement to this effect, which provided also that the payments to the architect should be made in instalments extending over a period of about two years. The county repudiated this contract, and Mr. Hodgson brought suit, claiming ten thousand dollars. what form his suit was brought by his counsel does not appear, but the remarks of the judge show in what form it ought to have been brought. The Court said "upon the assumption that the county has repudiated this contract, and that nothing has been done under it beyond the preparation of plans and specifications, the plaintiff's remedy is for damages for a breach of the contract." Under the well-known principles of law, the amount which could be recovered, in this case would be the full amount agreed to be paid to the architect, namely, five per cent on the cost of the building, less the actual expense to him of doing the work which he was relieved from doing by the repudiation of the contract. The counsel for the county, of course understanding this, argued that the contract with the architect, though apparently entire, was really divided into several parts, one relating to the plans and specifications, another to the superintendence, and so on, and that, as he had done no superintendence, he could claim no compensation for it. The judge, however, regarded this view as untenable. Unfortunately, the plaintiff's counsel introduced another difficulty into the case, by averring, in the complaint, that the contract between the architect and the county had been fully complied with. As the court-house is not vet built, it is obvious that this complaint was defective. Moreover, a constitutional question was brought up, the counsel for defendant demurring to the complaint, on the ground that the constitution of the State of Oregon prohibited any county from incurring an indebtedness of more than five thousand dollars. This demurrer was sustained by the court, on the ground that the contract sued on was void under the constitution of the State.

TPART from this constitutional question, which suggests the thought that it would have been well for the architect or his counsel to have inquired into the legal restrictions affecting contracts with counties, before signing such agreements, or bringing suit upon them, it would have been interesting to know how the Oregon Court would have treated the other important questions brought up by the suit. If, instead of making the mistake of alleging full performance of the contract on the part of the plaintiff, the complaint had, more correctly, alleged that the plaintiff was willing and ready to complete his contract, but was prevented from doing so by the other party, the question would come up whether the architect was entitled to collect at once his compensation for superintending a building which had never been erected, or must wait until it was built. If the county had wholly abandoned the idea of building, he could probably collect, apart from constitutional prohibitions, his whole fee; but, if the county had simply put the superintendence in another architect's hands, or had postponed building for a time, some courts, judging from the analogy of other cases, would hold that he must wait until the completion of the building before he could sue for his final fee; while others would regard it as unnecessary to wait, holding that his right to full damages accrued immediately on breach of the contract. Still another complication was introduced by the stipulation in the contract that the architect's compensation should be calculated on the actual cost. As the judge said, no one could tell what the actual cost was until the building was finished, and there would be a question, the contract saying nothing about estimated or reasonable cost, whether anything except actual cost could be used in making the computation.

WROUGHT IRONWORK.1-I.



Fig. 1. From the Cloister of the Cathedral of Le Puy: Twelfth Century.

No noteworthy specimens of ironwork have come down to us from antiquity, since iron can not well withstand the action of time; moreover, all important pieces were of bronze and the traditions of the founder's art were perpetuated to a very late date in the West, for under Charlemagne doors were cast for the Church of Nôtre-Dame at Aix-la-Chapelle, while in the eleventh century were cast those of Saint Zeno at Verona, and later still, those of Pisa, and of the baptistery of Florence, and the grilles at Pistoja.

Less fortunate, the iron-worker's art passed through a long period of barbarism, and did not begin to revive until toward the eleventh century; again, throughout this entire century the straps of the hinges and other ironwork were coarsely wrought; in the twelfth century, there is a perceptible improvement in fashion and design: the nail heads were then modelled, the straps were covered

with engravings or with indented work executed with a punch. C-shaped branches were introduced, which added stiffness to the planks of the door and embellished the flat surface; and with the aid of the hammer these branches were terminated with fleurons.

The churches of Orcival, Ebreuil and Brioude, and the cathedral of Le Puy, exhibit good specimens of the ironwork of this period; as an example of a twelfth-century grille, we give (Fig. 1) the one in the cloister of the cathedral of Le Puy; the process of manufacture was simple and similar

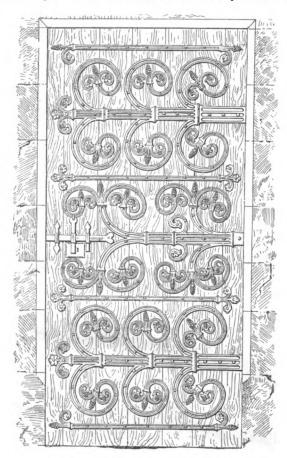


Fig. 2. From the Cathedral of Sens: Thirteenth Century.

grilles are yet frequently encountered, notably at Conques, and Saint-Aventin, in San Michele at Pavia, etc; the iron strap has here been cut into twigs which are curved as volutes, more

or less rolled and banded together in pairs, by compartments. This grille is rich without much cost, notwithstanding a certain imperfection in the welding, an excusable defect in view of the meagre means at the smith's disposal in the Middle Ages;

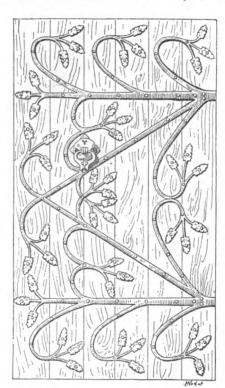


Fig. 3. From the Cathedral of Magdeburg: Fourteenth Century.

from the conversion of the lump of metal into straps to the welding of a honeysuckle ornament, everything was done by hand; but the iron obtained in lumps by the aid of charcoal and worked as we have indicated had qualities of ductility and cohesion that the iron of to-day no longer possesses.

Owing to the superior quality of the metal, it may be said that the thirteenth century marks the apogee of the art of hammering and welding iron, and we cite once more the ironwork of the doors of Nôtre-Dame at Paris as a masterpiece of the ironworker's

art in the Middle Ages. This and all similar productions (Fig. 2), with more or less wealth in the foliage, cost enormous

labor, for after the leaves and fleurons were stamped and the honeysuckle ornaments were forged, it was necessary to solder these together, then combine them in clusters and lastly weld the clusters to the principal stems and these to the straps, the whole being held by loops and nails. These scrolls are, then, the motive most frequently employed in the thirteenth century, and they were all the more effective because they were placed against painted hides; the handsome grilles of Saint-Yved at Braisne and of Westminster were designed and wrought in accordance with the same principle. In the fourteenth century, the iron of the

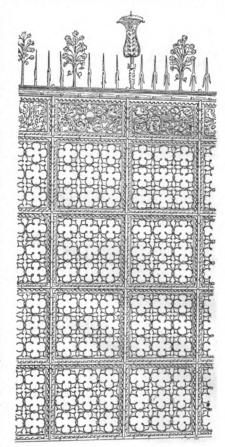


Fig. 4. From the Cathedral of Sienna.

straps was made flatter and covered the planks of the door like a network; in Germany there was even a tendency to give the network an appearance of vegetation (Fig. 3); it is true that at this time

¹ From the French of Henri Nodet, in Planat's Encyclopédie de l'Architecture et de la Construction.

an attempt was made to simplify the stamped work and reduce the number of weldings and solderings. Wrought-iron carved into foliage and engraved was afterward fastened to the ends

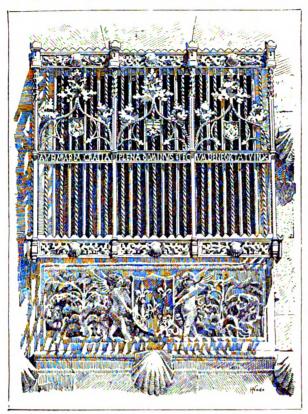


Fig. 5. Window Grille, Salamanca.

of the stems; at an early date, sheet-iron was produced in Germany; it was shaped and then connected to the stem, and

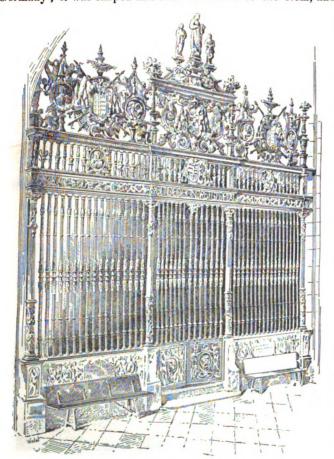


Fig. 6. Grille from the Cathedral of Palencia: Sixteenth Century.

this disposition was generally adopted in France in the fifteenth and sixteenth centuries.

Although less exaggerated than in Germany, the ornamenta-

tion, obtained at slight expense by the uses of sheet-iron, was yet remarkable, and the churches and museums preserve fine specimens of work of the sort.

The grilles are distinguished for the care exercised in the combining of the parts; they were in general formed of panels framed into uprights and these panels were composed of quatrefoils or lobed circles (Fig. 4); in the thirteenth and

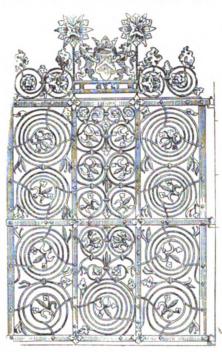


Fig. 7. Balustrade at the Town-hall of Luxemburg: Sixteenth Century.

fourteenth centuries this kind of composition was very pop-ular. Toward the fifteenth, the bars. some placed at an angle, others twisted in spirals, all passing into the swelling holes of the crosspieces, terminated in a festooned gallery with sheet-iron ornamentations, as in the beautiful grille of the chapel of the Archbishop Ernest in the cathedral of Magdeburg; or the bars spread out above the upper crosspiece in a vegetation of fleurons and leaves of wrought-iron, whose suppleness very closely imitated It is in nature. Spain that the finest examples of grilles

of this sort are found, and where sumptuousness reached its highest limit.

The window-grilles followed the same decorative path; sometimes the iron bars crossing each other were merely adorned with a fleuron at each intersection; sometimes curved twigs recalling those of the twelfth century formed the network between the uprights; Figure 5, grille of a window at Salamanca (Casa de las Conchas), gives an accurate idea of the decorative system adopted in the fifteenth century; Figure 6, grille of a chapel in the cathedral of Palencia, is a beautiful specimen of the Spanish art which, in the sixteenth century, began to imitate the orders in the disposition of enclosures and, with already advanced means of production, forged pieces of considerable weight, supporting grilles which, by their size, are veritable monuments. France, Germany (Fig. 7) and the northern countries remained faithful for a longer time to mediæval traditions.

We will say nothing of balustrades, tie-rod anchors, braces, etc.; these secondary objects cannot be discussed here; the study of ironmongery or hardware would also carry us too far. This ironwork was treated with remarkable care and art; the decoration, whether welded or rivetted or soldered, possessed the characteristics of the ornamentation peculiar to each cen-

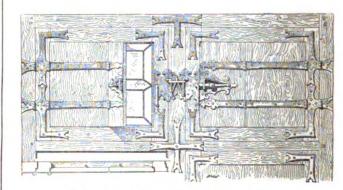


Fig. 8. Window-shutters: End of Fifteenth Century.

tury, and in the museums where they are preserved we can fix at a glance the date of case-locks, where the bolt slipped in a wrought and engraved sheath, of latch-locks or hasp-locks, the

flat of which exhibits a decoration of sheet-iron leaves, openworked and superposing the bolts, sliding bolts, the scutcheons of which were slightly notched and rested against a background of red cloth; we must also pass over in silence the knockers, torch-holders and nails which play an important part in the ornamentation of doors, especially in Spain. In passing, we may, however, note that the *crémone*, or basquill bolt, dates back to the fourteenth century, and that there was a fondness in the Middle Ages for exposing every piece of iron designed for use; at the end of the seventeenth century and also at the present day, the case is just the reverse. We give (Fig. 8), as a very modest example of this general tendency, which had happy results, from a decorative standpoint, a window-shutter belonging to the end of the fifteenth century, the frame of which was fastened to the stone mullions; the squares, the HL-hinges of the frame and the folding-shutter, the small spring-latches - everything is visible and contributed to the ornamentation of the wood

When the smith forged the ironwork for a well, he exercised no less care in putting together and staying the uprights, and to this framework he applied a decoration of sheet-iron, which, when set off with bright colors, enlivened the public square. Specimens of these are still to be seen in the different European countries.

(To be continued.)

THE PUBLIC BUILDINGS BILL.

N August 3, 1894, Mr. McKaig, from the Committee on Public Buildings and Grounds, submitted the following report:

The Committee on Public Buildings and Grounds, to whom was referred House Bill 7470, make the following report:

The United States Government has at this date nearly 300 public buildings in the various stages of progress, of planning and construction, all under the supervision and control of the Supervising Architect of the Treasury, and from 50 to 60 new buildings are authorized to be constructed by each Congress. To carry on these works and to provide for the construction of these buildings, many millions of dollars are annually appropriated and expended. For the expenditure of the moneys thus appropriated, as for the expenditure of moneys appropriated for any other public purpose, methods should be adopted which will secure the largest degree of utility from and economy in the application of the moneys expended. Your committee do not believe that these results and other beneficial results that should be obtained are obtained under the existing methods for planning and constructing the public buildings of the United States.

While the employment of the best artistic thought, the best and most approved systems of construction and equipment, and the utmost development of structural economics ought to be represented in the public edifices of this great nation, the contrary of these propositions is the result obtained under existing methods.

our committee are advised that the best and highest types of artistic thought and architectural skill, producing the development of structural economics in European countries greatest is found in the Government buildings of those countries; but such Government buildings in artistic design, if not in economy of construction, surpass those erected by municipal or private enterprise, while in this country the reverse is the rule and superiority of architectural design and economy of construction is represented in State, municipal and private buildings, and not in those erected by the General Government.

A comparison of modern municipal buildings in our great cities, and business buildings erected by private citizens and corporations in such cities, with those belonging to the Government of the United States will show as to the former constant progress in construction, equipment and artistic expression, and that this progress has been accompanied by a continual increase in economy of construction, while in the case of the buildings of the United States there has been but little, if any, advance upon methods of construction or equipment in recent years; in fact, the buildings constructed recently by the United States as compared with those constructed a quarter of a century ago show a marked deterioration of artistic quality; that, despite the marked inferiority of the typical Government buildings, the cost has been relatively and positively much greater than that of private buildings of the best type.

Your committee has been furnished reliable and trustworthy information and data, showing that the cost of the best types of buildings constructed for States, municipalities, corporations and private citizens ranges from 38 to 50 cents per cubic foot of space, while the cost of the buildings constructed by the United States ranges from 50 cents to \$1 per cubic foot.

Thus it is demonstrated that the Government of the United States, in the methods it employs, does not avail itself of the best and most approved systems of construction or utilize the developments of structural economics, and when we add that it does not employ the best artistic thought in the design of its structures to make such structures to serve as models and standards of excellence and superiority for the works of private ownership, but that such designs and plans fall so far behind the standards of the age that they are obsolete almost before they are drawn, and are always wasteful and extravagant, it is not surprising that it requires double the expenditure by the Government that is required to be expended by the private citizen to obtain like structural space results.

The conditions and results to which your committee thus call your attention are the conditions and results which necessarily follow the methods and practices now employed by the Government in planning and constructing its buildings, and in no respect give warrant for criticism of, or for impugning the capability or integrity of, the officers of the Government charged with the responsibility for such

The office of Supervising Architect of the Treasury was established at a time when but a few buildings were constructed by the Government annually, when the planning and general supervision of such few buildings was easily within the scope of the capacity of one man, and the purpose of the Government in creating the office was to obtain the exclusive benefit of the artistic skill and scientific knowledge of one learned and eminent in the profession of architecture for the planning of the buildings to be erected for its use. The main purpose in the creation of the office was that its incumbent should

e the artistic designer of such buildings.

If, by the development of conditions, methods and practices, it now transpires that the time of the Supervising Architect is wholly employed in matters of administrative detail, matters pertaining to contracts for construction or with details relating to the actual construction of buildings, and the architectural work of the office, the plans, designs and specifications are prepared by mere copyists, cheap clerks, such was not the intention of Congress when the office was created. It was to obtain architectural skill in the designing of buildings; to obtain and utilize artistic thought, not mere mechanical or clerical skill, that a Supervising Architect was wanted. It was not intended that, as now, clerks and copyists should do the work of the learned architect, and that the learned architect should be occupied with the work of clerks and copyists. Yet this is the present condition of the conduct of the work of that office, and it is necessarily so. It need not be urged that it is physically impossible for one man to devote sufficient thought and time to the proper designing and preparation of plans and specifications for fifty or sixty buildings each year, which in their artistic expression shall be creditable to the nation, to the age and to the architectural genius of the country and nation, to the age and to the architectural genius of the country, and that, in the economy of construction, shall do justice to those from whom the cost of such construction is drawn.

How much of the time of the Supervising Architect may be devoted to the work of designing and preparing the plans for buildings may be conjectured when the amount of administrative work devolved upon him under the present methods is understood. The volume of work thrown upon him relating to repairs, maintenance, and alterations of existing buildings alone is far greater than was the entire business of the office twenty-five years ago. In addition, every matter of detail relating to contracts for or the construction of buildings, the appointment of and correspondence with local superintendents of such buildings, has to receive his personal attention, as well as the administrative control of the large force of employes in the office. The Supervising Architect can not himself design and make original plans for each new building. This condition necessitates that the plans and specifications must be prepared by clerks in the office who possess no architectural skill or learning, by clerks in the office who possess no architectural skill or learning, and this results in the production of plans and specifications by the simple system of copying the drawings and specifications of a structure constructed in one locality, to be used as the design for another in a different locality, and this regardless of the difference in geological or atmospheric conditions of space requirements, thus resulting in the most wanton wastefulness of expenditure and absolutely precluding the possibility of progress in architectural design.

The Supervising Architect rarely ever sees one of these buildings while in course of erection. Its construction is generally under the supervision of some local carpenter or builder who never made any pretence to architectural knowledge or study, and whose appointment was secured, not because of his skill or knowledge of the work, but because of the political influence he could markel to severe him employment, and whose greatest solicitude is to prolong the tenure of his employment by delaying the completion of the work.

Another very serious evil resulting from the system and methods now employed relating to the construction of public buildings, to which the committee would call your attention, is the length of time required to construct and complete one of these buildings. A building which, if the property of a private citizen, would be constructed in months, when erected by the Government requires years for its completion. This necessarily results in great wastefulness and loss of money to the Government by the payment of unnecessary salaries of superintendents and other agents, by the expense of watching and caring for the materials and structure, and by the loss, waste, and deterioration of such material, besides the inconvenience to the citizens resulting from such delayed construction. From three years upward is the time employed in constructing a building that a private citizen or a corporation would complete in one year

As an illustration of the extent to which this evil may extend

under present methods, your committee would call your attention to the last annual report of the Supervising Architect in relation to the public building at Detroit, Mich., where the construction was authorized eleven years ago, and \$1,300,000 therefor has been appropriated by Congress years since, and the foundation walls are not yet completed. Indeed, the abuses in the method above referred to have become so serious that the committee can not conscientiously recommend public buildings at many places where the economical and convenient transaction of the business would require or justify such buildings could they be provided at a cost not greatly exceeding the necessary expenditure by a private owner for similar purposes. Of the bills reported from this committee during the present session, many are so reported only on the assumption that the buildings contemplated can be erected under some plan less

wasteful than that now in operation.

The scope and purpose of the measure herewith presented is designed to remedy the many evils herein pointed out. To give to the country a better type of architecture in its buildings, and to stop the wasteful extravagance that is the necessary result of the present methods, a system that is universally approved by the best business men and by the best-managed corporations of the country, should be a good system for the Government if its adoption is practicable. This measure authorizes the employment of such approved system. It authorizes the Secretary, in his discretion, to obtain plans and specifications and local supervision for its public buildings by the system of competition among private architects. While not mandasystem of competition among private architects. While not mandatory, it authorizes the Secretary to employ the architect whose plans are approved, to superintend the construction. It is to be presumed that this will secure the best architectural ability in the formulation of plans and the construction of the work according to such plans; that the compensation of such architects will be determined, as in private employment, on fixed commission on the cost of the work,

and that this will secure speedy completion of the work.

The measure does not abrogate or take from the Supervising Architect any of the functions or authority belonging to the office which, under existing conditions, he is capable of performing. He will still, as now, retain general supervision and control of the work. He will remain and continue the representative of the Government in all matters connected with the erection and completion of the buildings, the receipt of proposals, the award of contracts therefor, and the disbursement of money thereunder, and perform all the duties that now pertain to his office, except the designing and preparation of drawings and specifications for such buildings, and the local supervision of the construction, and such drawings and specifications shall be subject to his approval and to modification by him.

In fact, this measure is intended to make him what the title of his office indicates, the Supervisor of Architects; not the Government's architect, but the supervisor of the architects of the Government's

Therefore, your committee recommend the passage of the Bill.

LOUISBURG.

ITHOUT doubt the chief attraction for the tourist to Sydney,
Cape Breton, lies in its proximity to the ruins of historic Cape Breton, lies in its proximity to the ruins of historic Louisburg. It is hard to realize that a fortress city capable 150 years ago of containing 6,000 troops within its walls, and which had 15,000 inhabitants, all told, should have so utterly disappeared from the face of the earth that scarcely one stone is left upon another to tell the tale of its life and death. Our school-books and histories tell us of the siege and fall of Louisburg, but it is safe to say that the statement makes very little impression upon the juvenile mind. It was, therefore, with rather vague ideas of what we should find, that we set out upon a beautiful morning with the warning that we should be disappointed in what we should find there.

It is twenty-eight miles from here to Louisburg — twenty-five to

the new town, and three more to the old. The railroad spoken of in the guide-books exists only in them, but the drive there and back can easily be accomplished in one day, and there are comfortable accommodations in the new town for those who wish to stay over-

night.

The road runs over a rocky approach between fields filled with heaps of stones, marking the first lines of defense of the great fortheaps of stones, marking the first lines of defense of the great fortress, across causeways, by ponds and beaches. On one of the latter may be seen, at low tide, the remains of one of the French vessels sunk one hundred and fifty years ago; for here was the inner harbor, now almost filled with sand. Still farther on we come in sight of shingle-sided, whitewashed cottages, rickety wharves and platforms covered with salt fish, while men in oilskins are washing out nets, etc. — this where the lilies of France once waved. The oldest house in the place — and it looks its age — was probably built almost immediately after the siege, and here you will be welcomed to an atmosphere of Highland Scotch. The whole point is covered with heaps of stones which look almost as small as those which we call "macadam," and there is enough of it here, one would think, for most of the roads in Nova Scotia.

The story of Louisburg is a long one: begun in the year following

The story of Louisburg is a long one: begun in the year following immediately after the death of Louis XIV, taking twenty-five years to complete, costing thirty million livres, with a rampart of stone from thirty to thirty-six feet high and fifteen thick, and a ditch eight feet There were six bastions and batteries containing embrasures

for over 148 cannon. On an island at the entrance of the harbor was planted a battery of thirty cannon, carrying twenty-eight pound shot, and at the bottom of the harbor was a grand or royal battery of twenty-eight cannon, forty two-pounders and two eighteenpounders. On a high cliff opposite the island battery stood a lighthouse, and within this point, secure from all winds, was a careening wharf and a magazine of naval stores. The entrance to the town was over a drawbridge spanning the moat, near which was a circular battery with sixteen fourteen-pound guns.

Such was the great fortress of the northern shore, a stronghold such as was never seen elsewhere on this side the Atlantic, "the Dunkirk of the North." The first assault made upon it was in 1745, troops of the colonies of Massachusetts, Connecticut and New Hampshire, to whom it was a menace and a constant destroyer of their fisheries. These were led by William Pepperel, a merchant of Maine who afterwards fought at Bunker Hill. These troops attacked the stronghold both from the land and the sea, and before their inventorial Louishner fell.

their impetuosity Louisburg fell.

Three years after its capture, much to the chagrin of the colonists, the treaty of Aix la Chapelle restored it to France, but two years afterwards, in 1751, a formidable enemy appeared in the shape of the English army and fleet under Amherst, Boscawen and Wolfe, which also assaulted it both by land and by sea with twenty-three ships of war, eighteen frigates and sixteen thousand land forces. A two months' siege followed, and Louisburg fell to rise no more. As the English were now in possession of Canada it was decided that as long as Louisburg was allowed to stand, it would always invite an by the French, and it was determined that the fortification should be destroyed.

A garrison of 250 men was kept here for five years constantly engaged in the work of destruction, and to-day nothing remains but shapeless heaps of stone except two bomb-proofs which occupied either side of the citadel, one consisting of four and the other of two tunnels. The former are open through, but of the latter one is almost as perfect as when made, and would almost seem as if it had been forgotten to destroy it. It is easy to trace the line of the fortifications, the walls, the moat and to see where were the gates on the east, west and south. Here are also the ruins of the Government east, west and south. Here are also the ruins of the Government Building, a shapeless heap like the others, where a company has thought of digging for treasure. Coins or "kines," as our good guide calls them, are sometimes found—quite a quantity being discovered by a man who was digging out brick from the black-smith's forge—while bullets and cannon-balls are staple articles of traffic. Little ponds are all that are left of the great moat which encompassed the city—the rest is grass-grown. The heaps of stone which everywhere greet the eye are mostly gray, but some are dark brown from Black Rock, the extreme point of the promontory, and which seem to have been used to repair the walls, and there are also which seem to have been used to repair the walls, and there are also some piles of building-stone which was brought from France, and

which seem to be Caen stone or some kind of soapstone easily cut.

It is hoped that the railroad to Louisburg will be completed this fall. It is intended chiefly for the use of the coal trade, and will be most useful as the harbors of Sydney are closed by ice for many months, and coal can then be shipped from Louisburg. Travellers, too, will use it, and it will build up Louisburg, but, perhaps, at the same time render it less attractive, and much pleasure will be lost by giving up the twenty-eight mile drive. — A. D. Abbatt, in the N. Y. Evening Post.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

MAIN HALL OF SUFFOLK COUNTY COURT-HOUSE, BOSTON, MASS. MR. GEORGE A. CLOUGH, ARCHITECT, BOSTON, MASS.

Gelatine Print, issued with the International and Imperial Editions only.

THE hall is finished in polished granite and white marble. The sculptured figures, representing sundry human virtues, which decorate the corbels are the work of Domingo Mora.

THE NEW CITY STABLES, SOMERVILLE, MASS. MR. A. H. GOULD, ARCHITECT, SOMERVILLE, MASS.

THE building is 170 feet long, with a depth of 46 feet; built of brick, with granite and galvanized-iron cornices, and the roof is to be slated. The main floor has sixty stalls, and there is also a harness room and lavatory. The floor is to be of hard pine, and the ceiling is to be sheathed with the same material. The whole of ness-room and lavatory. The floor is to be of hard pine, and the ceiling is to be sheathed with the same material. The whole of the second floor is to be used for the keeping of hay and grain. There is a large main entrance in the centre on the front side and an entrance at each end of the building. At the rear of the building the walls are to be carried down, so that there will be two entrances, one near each end, and plenty of windows for admitting light to the basement. The floor of the basement will be concreted, and this portion will be utilized for the storing of carts, snow-ploughs and other implements of the department. GALILEE PORCH AND WESTERN TOWERS OF TRINITY CHURCH, MESSRS. SHEPLEY, RUTAN & COOLIDGE, AR-BOSTON, MASS. CHITECTS, BOSTON, MASS.

WORK has already begun upon the alterations here indicated.

TRINITY CHURCH, BOSTON, MASS., SHOWING PROPOSED ALTERA-TIONS BY MESSRS. SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS, BOSTON, MASS.

THE PECK OCHOOL, WORCESTER, MASS. MR. GEORGE H. CLEM-ENCE, ARCHITECT, WORCESTER, MASS.

[Additional Illustrations in the International Edition.]

THE WOODED ISLAND AND OVERLOOKING BUILDINGS, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL.

[Gelatine Print.]

THE BUREAU OF PUBLIC COMFORT, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MR. C. B. ATWOOD, ARCHITECT.

[Gelatine Print.]

BATTERSEA POLYTECHNIC: GENERAL VIEW, LONDON, ENG. MR. E. W. MOUNTFORD, ARCHITECT.

BATTERSEA POLYTECHNIC: THE HALL, LONDON, ENG. MR. E. W. MOUNTFORD, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE WISDOM OF THE SERPENT.

MINNEAPOLIS, MINN., July 31, 1894.

To the Editors of the American Architect:

Dear Sirs, — The State of Minnesota has a Capitol Building, erected some ten or twelve years since, but the character and history of it are such as to have impressed the last Legislature with the of it are such as to have impressed the last Legislature with the wisdom of providing for a new building. The bill providing for a Commission to have the construction in charge, in addition to questions of cost, site, ways and means, etc., was introduced by Senator McMillan, a very intelligent and fair-minded contractor, who was anxious to have it embody the best interests of the public in every sense and was reasonably appreciative of the fact that good architecture is a condition precedent to that end.

The Bill, as originally introduced, possibly erred in going too much into detail, and in prolonging the period of construction too much.

The Bill, as originally introduced, possibly erred in going too much into detail, and in prolonging the period of construction too much. Had it attempted less detail, it might have escaped an amendment in the House, which is now causing the Commission no end of anxiety. However that may be, the Act as finally passed provides a limit in cost of site and building, which, after the purchase of the site, leaves a million and a half dollars for expending on the building.

All contracts must be let before beginning the building and the time.

All contracts must be let before beginning the building, and the time of building is to extend over a period of ten years.

Designs are to be selected in competition and all drawings are to be signed by their authors. The number of drawings required are not large, but the scale of the plans (one-eighth inch) might better be smaller

A fair degree of uniformity in rendering is compulsory. For the designs selected as second, third, fourth and fifth in point of merit, premiums aggregating \$2,000 are to be paid, and no part of a design other than the one placed first and selected for execution may be used, except the author be paid for the use of the feature or features so used: ["only used in whole or in part by agreement with and compensation to their authors."] On this point the instructions of the Commissioners say further that "nothing shown in any of the rejected designs which is original as to this competition, shall be rejected designs which is original as to this competition, shall be adopted or made use of in the building, without proper remuneration to the author; and in case of disagreement as to this, it shall be referred to the professional advisors of the Board, whose decision shall be final, not only as to the amount to be paid, but in regard to the real existence of the claim."

The Commissioners have somewhat increased the labor of estimating required by the Act, for their instructions require, in addition to mg required by the Act, for their instructions require, in addition to "an accurate statement of the estimated total cost of each class of work and material necessary, etc.," that "each design shall be accompanied by a statement showing the area of floor-space on each of the floors, and the cubical contents of the building, and the estimated cost per cubic foot." All this in face of the fact that nothing can be done in the way of building until every part is under contract. contract.

When the Bill was under consideration by the House, a representative from Minneapolis, a stone mason or cutter, or perhaps contractor with a knowledge of the capacity of architects, "took a fall" out of them by inserting a clause making the compensation of the successful designer two and one-half per cent. This, as may be readily believed, proved a winner, and was incorporated into the

It may be said that the Minnesota Chapter, A. I. A., was at all times as active as appeared to them wise in securing an Act that would be likely to bring about a good design, and that they had no difficulty in bringing the better part of the legislative committee having the bill in charge to meet their views; and that after the appointment of the Commission and the selection of a site, the Chapter made a determined effort to bring about such an interpreta-tion of the law as would attract the services of men of the first-class. Mr. Gilbert, president of the Chapter, prepared a most convincing address to the Commission, and that a special committee of the Chapter labored with great success is shown by the following extracts from a letter of the Vice President and Acting Secretary of the Commission to the Attorney-General, asking for an interpretation of the law.

ST. PAUL, MINN., April 9, 1894.

H. W. CHILDS, Attorney-General.

H. W. CHILDS, Attorney-General.

Dear Sir, — At the next meeting of our Board, which will be held very soon, we shall have reached the next, and probably the most important step in our proceedings, namely, the preparation of an advertisement addressed to the architects of the United States, setting forth our requirements as to the building itself. Accompanying the same, it is proper, and we are required by the law also, to submit full detailed explanations as to dimensions of the building, sizes of the different rooms, etc., in short, answering beforehand questions that would naturally arise in the minds of architects, before they enter upon the work of drawing plans. In connection with this subject, my attention has been repeatedly called to certain provisions in the law, which are not as plain as they might be, and to one of which I desire to ask your not as plain as they might be, and to one of which I desire to ask your opinion.

It is the well-settled usage in the construction of all buildings, for

opinion.

It is the well-settled usage in the construction of all buildings, for the architect to divide his compensation into two parts, in cases where he both furnishes plans and specifications, and superintends the construction. In small buildings, like dwelling-houses, the usual charge made by architects is two and one-half per cent upon the cost of the building, for "plans and specifications"—and two and one-half per cent for "superintendence." I give you this information merely to preface the question I desire to ask.

The New Capitol Act provides (Section 5) that our Board "shall appoint some proper person, not of their number, to superintend, under their direction, the erection of the State Capitol, as provided for in this Act, whose duty shall begin after the contract for the building is let; such superintendent thus appointed shall receive for his services a reasonable compensation, to be established by the Board," etc., etc.

Sub-division 9 of Section 8 of the said Act provides, that the design selected by the Board, for the new State Capitol, "shall remain the property of the architect or firm who made it, and shall not be used, in whole or in part, except said architect or firm is employed as architect and superintendent of the building; and the fee of such architect or firm shall not exceed two and one-half per cent of the amount named in said bill, exclusive of cost of site," etc., etc. And further on, in same section, it says, "the accepted design to receive no premium, other than the fee allowed by the Board for designing and superintending the said building."

I am greatly in doubt whether the best architects of the country will said building

said building."

I am greatly in doubt whether the best architects of the country will enter upon the responsible and expensive labor of preparing plans for the new building, if it is decided that we cannot pay them any greater compensation than two and one-half per cent upon the cost of the building, for both designing and superintending the construction during a period of ten years, which it will take to complete the same, and I have been so informed by several architects, both resident and non-resident. Such architects as Messrs. . . cannot afford, with their national reputation, to compete for our building, if they should be required to both prepare plans and detailed working-drawings, and also to superintend the construction, during a period of ten years, for two and one-half per cent, and it is just such talent as they possess—the best—that we wish to enlist in the competition, for it would be both unwise and unsafe to trust so great a responsibility to inexperienced and incompetent architects.

unwise and unsafe to trust so great a responsibility to inexperienced and incompetent architects.

Having in mind the general usage in these matters, which I have explained to you herein, it is my conviction that it was the intention of the Legislature to separate the designing of the structure and the superintending of its erection into two parts, in conformity to the usual custom, and I construct he extracts which I have given you from the Act, to mean that our Board is expected to follow out the following line of extreme.

the Act, to mean that our Board is expected to follow out the following line of action:

First.—We are to decide upon a plan, which must embody full detailed specifications and working-drawings, and for these we are prohibited from paying more than two and one half per cent of the cost of the building itself.

Second.—I think the law intended to confer upon our Board the same right and duty, namely: to either accept and pay two different architects—one for plans and one for superintendence—or to employ the same architect to do the two classes of work required, in which case, his compensation for the plans only is fixed by the Act, while his compensation for superintending is to be a reasonable one, and to be fixed by the Board.

fixed by the Board.

If my construction of the law is correct, and you so advise our Board, we can so frame our advertisement (soon to be issued), that the architects of the United States can be informed that it is within the province of our Board to employ the same architect whose plans we



accept to superintend the construction also, if we see fit, and find him a competent person to appoint, paying him an additional "reasonable" compensation therefor.

At your convenience, will you kindly examine the law, with reference to the question herewith submitted, and give me your opinion thereon, and much oblige,

Yours truly,

(Signed) CHANNING SEABURY, Vice-President and Acting Secretary.

The reply of the Attorney-General is so replete with new lights that the profession can't afford to miss any of it, and I give it below.

ST. PAUL, MINN., April 26, 1894.

Hon. Channing Seabury, Vice-President and Acting Secretary Board of State Capital Commissioners.

Dear Sir, — I beg to acknowledge receipt of your communication of the 9th inst., in which you request my construction of certain provisions of the Act of the Legislature of this State providing for a new Capitol touching the compensation of an architect as therein provided

Capitol touching the compensation of an architect as therein provided for.

You ask, in brief, whether the Act in question authorizes compensation to the architect at the rate of two and one-half per cent of the amount named in the said bill, exclusive of cost of site, as compensation for the design, and an equal commission as compensation for his services as superintendent of construction.

I have carefully noted the considerations which you have urged in support of the affirmative view, and regret my inability to concur in the conclusion reached by you.

The force of Section 5 of the Act is to authorize the appointment of a superintendent at a reasonable compensation to be established by the Board. The ninth subdivision of Section 8 prescribes the limit of the compensation which may be paid him, as it is therein expressly stated that "the fees of such architect or firm shall not exceed two and one-half per cent of the amount named in said bill, exclusive of cost of site." I place great stress upon another provision of the same subdivision to the effect that the design adopted by the Commission shall remain the property of the architect or firm who made it. Not only so, but it cannot lawfully be used in whole or in part "except said architect or firm is employed as architect and superintendent of the building." It seems very clear to me that the statute contemplates that the State is to pay nothing for the design and that the fees contemplated by the said subdivision relate exclusively to the services to be performed by the architect in superintending the construction of the building. State is to pay nothing for the design and that the test contemplated by the said subdivision relate exclusively to the services to be performed by the architect in superintending the construction of the building. And this view is strengthened when we consider the provisions of the tenth subdivision, wherein it is provided that "four premiums shall be given to the aggregate amount of two thousand dollars, to be awarded to the designs adjudged to stand in point of merit second, third, fourth, fifth; the accepted design to receive no premium other than the fee allowed by the Board for designing and superintending the said building."

It is, therefore, obvious that no specific fee is to be paid to the architect for the design, and that it is only in case the architect serves as superintendent of construction that he is to be paid any fee, and then only the fee expressly prescribed in the ninth subdivision, which is not to exceed two and one-half per cent of the amount named in the bill.

In addition to the views hereinbefore expressed, it is obvious that when the Legislature provided that the design to be adopted should not become the property of the State, it was foreign to the purpose of the law-maker to authorize the Board to pay fifty thousand dollars for the use of it, or any less sum.

Whatever may be said as to the policy of the State in providing compensation for the architect, the remedy, if that compensation is deemed insufficient, must be provided by legislation and not by construction.

I am,

Very truly yours, (Signed) H. W. CHILDS Attorney General.

An architect who goes into court is apt to see his calling from a new point of view, but here is an official who can give points to any court yet reported on the manner of reckoning an architect's compensation.

"It is only in case the architect serves as superintendent of con-

struction that he is to be paid any fee!

But suppose Mr. Seabury's Commission conclude to employ an architect who did not design the building to supervise the construction of it. They would then owe the designer nothing!

This also is choice. "It is obvious that when the legislature pro-

vided that the design to be adopted should not become the property of the State, it was foreign to the purpose of the law-makers to authorize the Board to pay \$50,000 for the use of it, or any less

Well, the Board have invited the designs to be submitted before the 11th of September, and are now understood to be murmuring to the effect that no architect of first-class reputation has applied for

instructions, and that what few applications they have had have been accompanied by "kicks" against the conditions.

In the early stages there was decided activity among a class of architects who have earned a reputation for regarding first commis-

architects who have earned a reputation for regarding first commissions as merely incidentals, but there are oaths and bonds in the conditions of service that will possibly deter even these.

There is another clause in the Act, which may also appear ominous to would-be competitors outside the State, to wit:

"So far as the said Board are of opinion that the same can be done consistently with the best interests of the State, preference shall in all cases be given to Minnesota material and labor." All of which may mean little or much, but the Board is appointed by the Governor All of which of a State in which there are a fair sprinkling of politicians, in the latter-day sense of the word. MR. PINCH.



BOSTON, MASS. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts.

EW YORK, N. Y. — Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

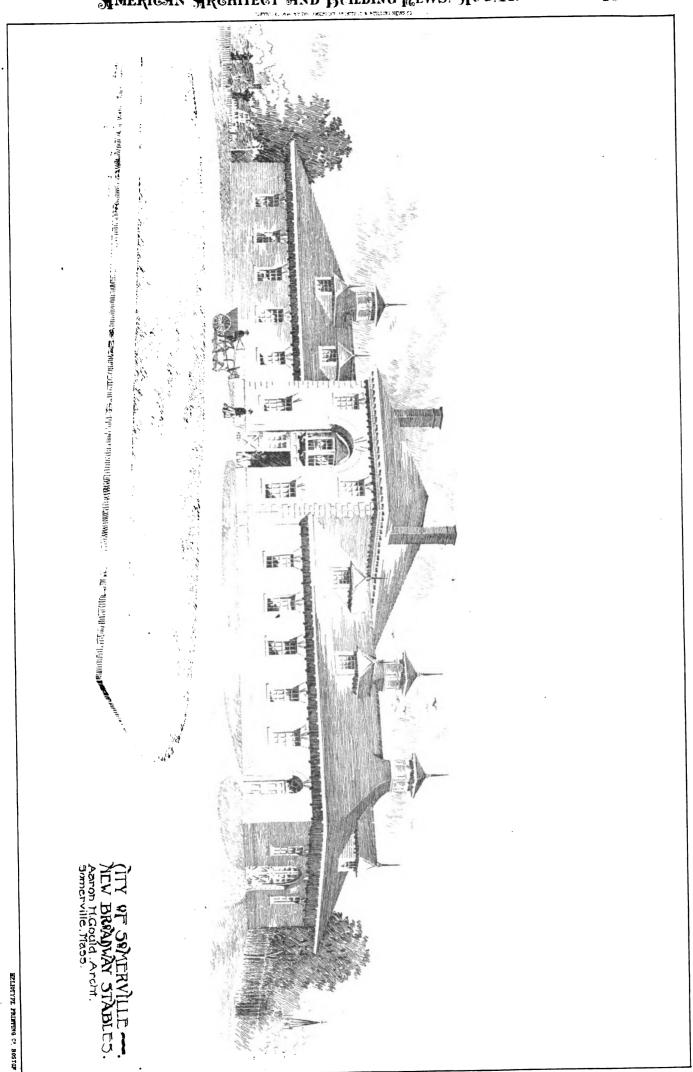


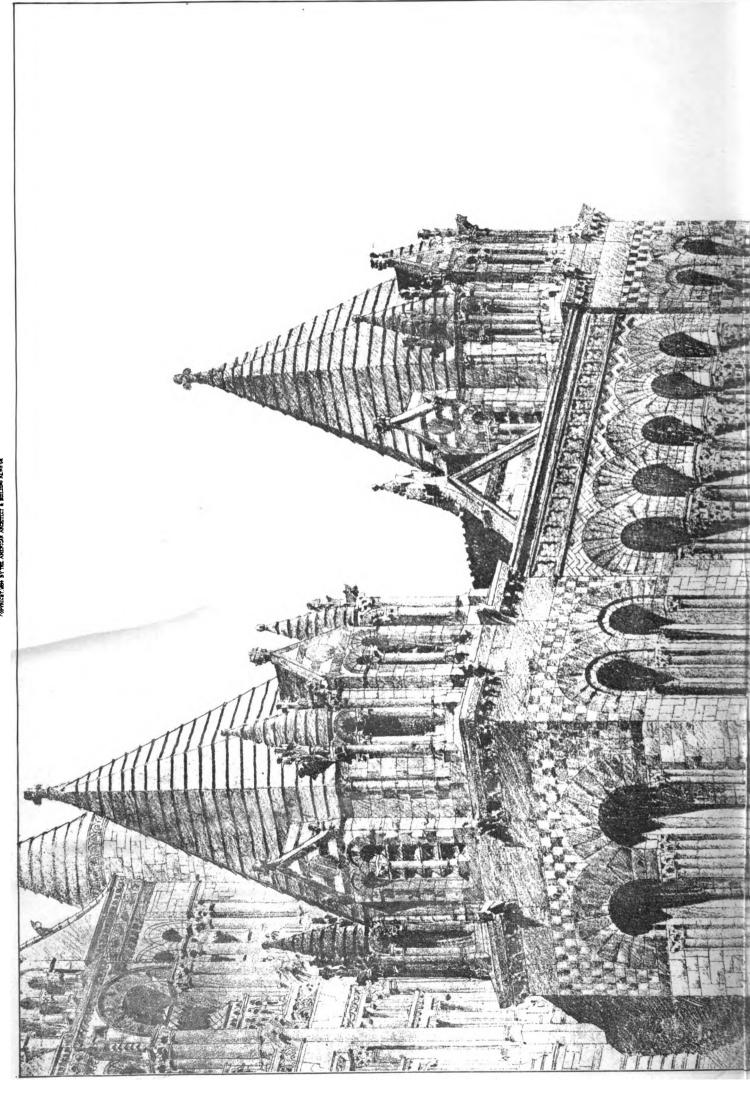
BRITISH STRIKES AND LOCK-OUTS.—The report of the labor correspondent of the Board of Trade on the strikes and lock-outs of 1892 deserves careful reading. To those who resort to this means of sections. BRITISH STRIKES AND LOCK-OUTS.—The report of the labor correspondent of the Board of Trade on the strikes and lock-outs of 1892 deserves careful reading. To those who resort to this means of settling trade disputes it cannot be said to be very cheering. There were during the year 692 strikes and 8 lock-outs, affecting 371,799 persons. Of the 692 strikes, 345 were settled either by mutual conciliation or by mediation, 115 by submission of work-people, 79 by the hands being replaced, 33 by conciliation and submission, 13 by conciliation and hands being replaced, 22 by submission and hands being replaced, and 16 by arbitration. The largest number were thus, it will be seen, settled by conciliation or mediation. Why, therefore, it may be asked, was not conciliation or mediation resorted to in the matters in dispute before the strikes took place? As regards the cost of these conflicts it is difficult to arrive at anything like definite figures. The amount of wages not paid during the period of stoppages is variously estimated at from £485,000 to £495,000 per week. The capital laid idle in 511 establishments making returns was very nearly £19,000,000. The cost of restarting works in the cases of 45 firms was £165,000, and £55,000 was spent by employers in resisting strikes. In 235 strikes the contributions from trade-unions to men on strike reached a total of £163,000, this, of course, being only a fraction of the total sum expended in this way. It will thus be seen that the cost directly and indirectly has been enormous, and Mr. Burnett's conclusion on the whole matter is that "the general balance of results was against the workmen, as may always be anticipated during a period of declining trade. But there is "the general balance of results was against the workmen, as may always be anticipated during a period of declining trade. But there is, it seems, a growing opinion, expressed year by year, both among employers and workmen, in favor of various forms of arbitration and conciliation. That, at least, is something to be thankful for." — Westminster Gazette

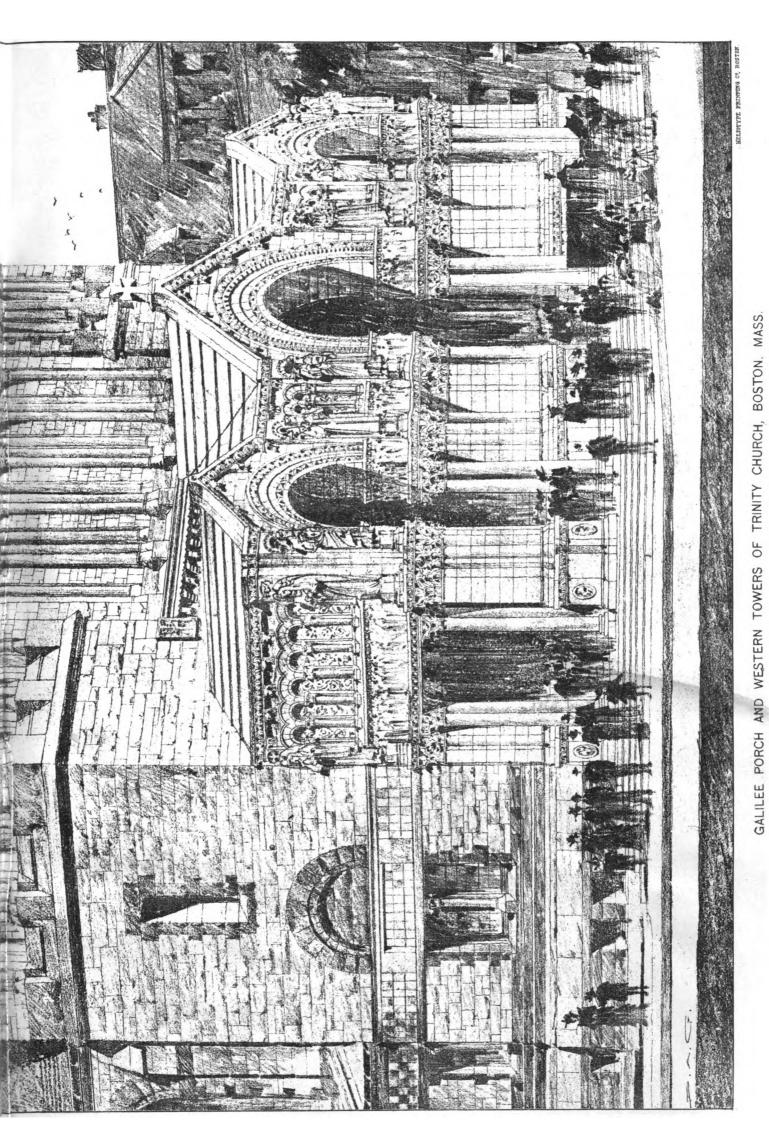
minster Gazette.

Find of a Statue at Delphi. — Writing from Kastri, the site of Delphi, to the Journal des Débats, M. Georges Perrot describes the finding of a marble statue. He arrived as they had hoisted it from the trench and were washing off the earth: "One after the other, beneath the floods of water and the impatient fingers that helped to do the work, all the features of the statue were disengaged from the mould that enveloped them. We perceive the head of a woman which is framed with locks arranged symmetrically in curls. The head is crowned by a high Polos, a sort of cylinder, which is depressed at the top like the calyx of a flower, and on the sides of which, in low-relief, are carved certain figures that appear to be Apollo and the Muses. Rich ear-rings have been carved in the marble. The work has a very distinguished air; plainly it dates from the end of the sixth century before Christ. It is of near kindred to those polychromatic statues, those singular and charming figures of women, which were found in 1886 on the Acropolis of Athens, near the Erechtheum, hidden in the dumpings by means of which the new level of the citadel was smoothed and raised up when the Athenians undertook the restoration on the departure of the Persians. It is in the same style and the same taste." M. Perrot regards the figure as a caryatid like the famous beam-supporting nymphs of the Erechtheum at Athens. If the French excavations at Delphi have so far yielded comparatively few sculptures, the inscriptions are plenty. About 400 were found at Olympia; at Delphi they have already unearthed 1,500. Among the sculptures are an archaic Apollo, larger than life, made by a sculptor from Argos, a fine sphinx dedicated by the citizens of Nani, and the outer sculptures of the little "treasury" maintained at Delphi by the Athenians. This small Attic headquarters bears as date the day following the battle of Marathon, and is in perfect repair. fect repair

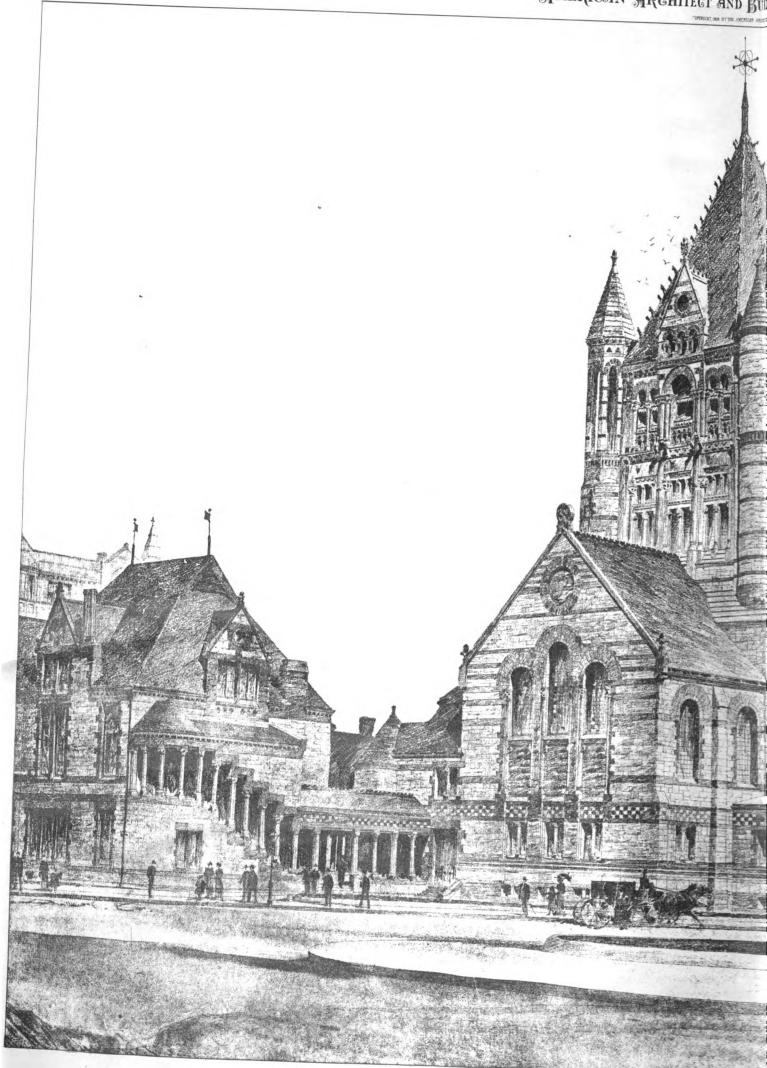
WHY SCOTT HAS NO MEMORIAL IN WESTMINSTER ABBEY. — Americans and other visitors to Westminster Abbey must be amazed when they find that Sir Walter Scott has not a memorial in Poets' Corner or elsewhere. There is, however, a medallion of the Last Minstrel, but it is in the clerk-of-works' office, which strangers are not likely to seek out. Seven years ago subscriptions amounting to 171l. were received by a memorial committee, and they paid 157l. to the late Sir John Steell, for a medallion which was, it is said, made to the dimensions indicated by Mr. Pearson, R. A. But when the medallion arrived, the architect considered it was out of scale and not suitable to the Abbey. With that opinion the Dean and Chapter agreed, and it was confirmed by some non-official advisers who were consulted on the matter. Sir John Steell when he heard the decision was of course disappointed, but he could only hope that the authorities would subsequently take a more favorable view of his work. That time has not arrived, and meanwhile Scott's name does not appear in a place for which it is worthy, and the most popular author of the century might, therefore, be supposed to have been another Byron. — The Architect. WHY SCOTT HAS NO MEMORIAL IN WESTMINSTER ABBEY. - Ameri-



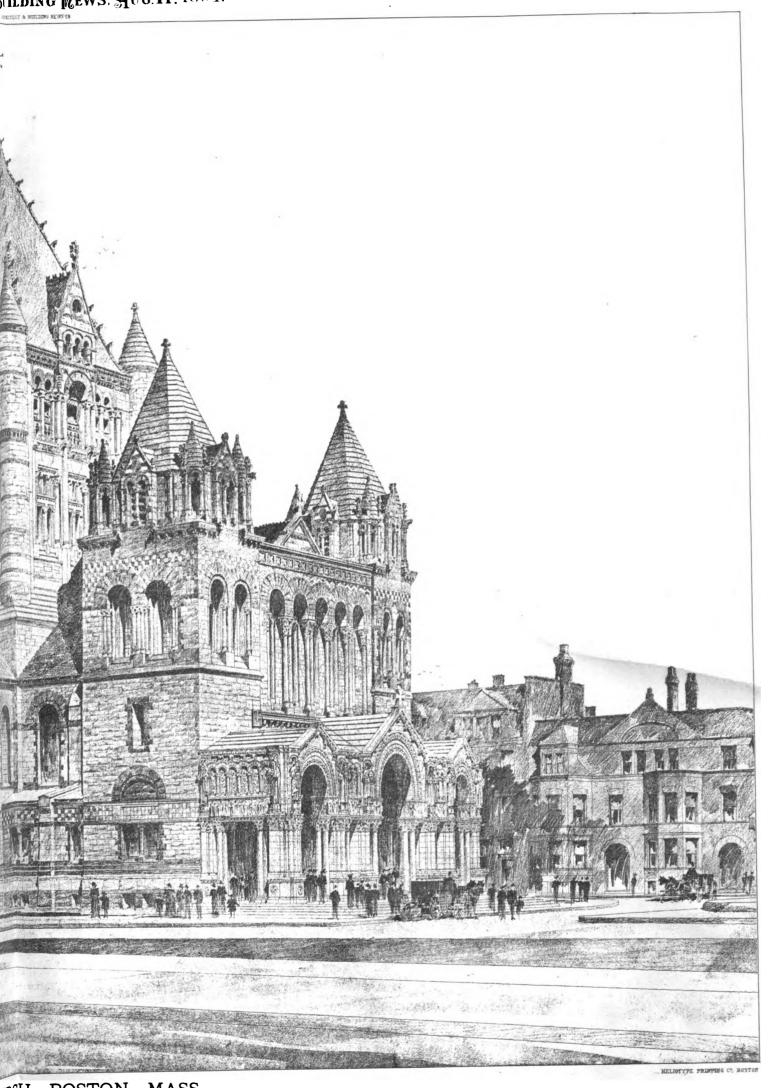




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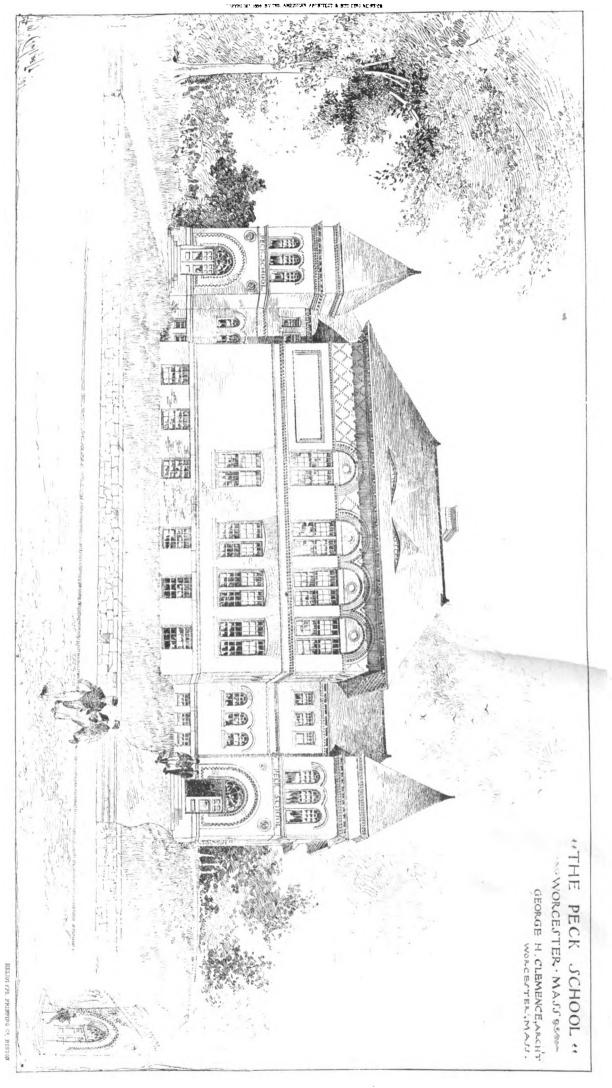


TRINITY CHURC



URCH, BOSTON, MASS.

PO. 972. American Architect and Building News. Aug. 11. 1594.



Entered at the Post-Office at Boston as second-class matter.

AUGUST 18, 1894.



SUMMARY: -

THE RELATIONS OF EMPLOYER AND WORKMAN.

LETTER FROM CHICAGO.

THE PLANNING OF HOSPITALS.

ILLUSTRATIONS: —

Fireplace in House of H. L. Einstein, Esq, 44 West 53d St., New York, N. Y.—House at Indianapolis, Ind.—Alterations and Additions to House at Erie, Pa.

Additional: Proposed Public Markets at Paton, Baroda State, India.—Villa Castel, Parisis, France.—Lincolnshire Cricket Pavilion.—Competitive Design for Dining-hall: Christ's Hospital New Boarding-school, Horsham, Sussex, Eng.—Free Public Library, Edinburgh, Scotland.—Detail of the Entrance to the Same.

Communications:— COMMUNICATIONS: A Question of Commission. — Wanted: Radiators.

THE Twenty-eighth Annual Convention of the American Institute of Architects is to be held in New York, in the rooms of the Architectural League, on Monday, Tuesday and Wednesday, October 15, 16 and 17. Papers have been promised from Messrs. Longfellow, Van Brunt, Sturgis, Hastings, Wight, Sullivan, Gibson and Clark, and arrangements have been made for securing a full discussion of the papers. The matter of the relation of the Chapters to the Institute is to be brought up, by the offer of amendments to the by-laws, looking to the admission of all practising members of the Chapter to the ranks of the Institute, and putting the business of the Conventions into the hands of delegates from the Chapters. It is several years since a Convention has been held in New York, and it is to be hoped that there will be a full attendance. So much interesting architectural work has been done in New York during the last few years that members of the Institute from a distance will be well repaid for a visit to the city, and it is to be hoped that arrangements may be made for giving them a good look at the new work.

BY the profession in this country, the name of Arthur Rotch will always be honorably remembered, perhaps with some little injustice to his brother and sisters who joined with him some eleven years ago in founding, in the memory of their father, the trust that is expected to send abroad each year, so long as trusts may endure, an architectural student to study and travel during a period of two years. Having himself had the benefit of an unusually long period of study in Europe, Arthur Rotch, whose life closed this week, felt that in no way could more good be done for the architectural progress of this country, than by enabling a number of young men to gain that sort of education of the senses which control proportion and fitness that can only be had by occular observation of works of architecture in place. Born in Boston, May 13, 1850, and graduating at Harvard College with the class of '71, he studied architecture for two years at the Massachusetts Institute of Technology and then went to Paris and enrolled himself as a student at the École des Beaux-Arts. Here he worked with great persistency and considerable success, although often interrupting his studies by making extended trips into various countries. Returning to this country in the autumn of 1880, he disappointed his friends, who half expected that, having ample means, he would lead the life of a mere dilettante, by forming a partnership with George T. Tilden and entering actively on the practice of his profession. The practice of the firm has been confined mainly to dwellinghouses, of which many costly ones have been erected in Boston, Bar Harbor, Washington and other places. Of work of a different nature may be specified the Memorial Church of the

Holy Spirit, at Mattapan, Mass., the Church of the Messiah and Church of the Ascension, at Boston, the Art Museum for Wellesley College and the Rindge Manual Training-school at Cambridge. A director of the American Institute of Architects, he was also one of the Trustees of the Boston Museum of Fine Arts and was, toward the close of the work, supervising architect of the Suffolk County Court-house at Boston. By his fellow-architects, by his friends and by the citizens of Boston in general, he was considered a conservative, clearheaded man, whose opinions were generally worth listening to.

WHILE in Paris he acquired a remarkable skill in waterclosely to the School curriculum, he took pains to study work which French architects are apt to neglect, and so acquired a knowledge of decorative painting, and other branches ot the architectural art, such as few American architects possess. It is related of him that once, while travelling, he made the acquaintance of a lady, who, finding that he was an architect, began to talk with him about some improvements that she wished to make in her house. He became interested, and the lady was so much pleased with his ideas that, later, the work in the "house," which turned out to be the renowned Château de Chenonceaux, was placed in his hands, and an apartment, the windows of which he would point out in the pictures of the château, was allotted for his residence while the alterations were going on. Although, within the last few years, he was a great sufferer from a serious rheumatic affection, he kept actively at work, until his marriage, last year, gave him an opportunity to seek health, as well as pleasure, in a short tour in Europe. He returned some months ago, apparently better, but the cares of a busy winter were too much for his strength, and, early in the summer, he was obliged to take a Southern tour. From this he derived little benefit, and, soon after his arrival at home, a distressing pleurisy came on, which finally proved fatal.

PERSONALLY, Mr. Rotch was one of the most attractive, as well as the kinder and many as well as the kindest and most conscientious of men. Until attacked by the malady which in the end proved fatal, he was a model of activity and industry. Always interested in everything connected with his beloved art, he was very popular in the profession, and those who knew him best, understood best the delicacy of feeling, and absolute unselfishness, which he united with his clear-sighted energy. An opportunity for advancing the interests of architects and architecture was what pleased him most of all, but, so quiet was he in his good deeds that, even now, few people outside the University and his own family know that the Department of Architecture, which was established last year in Harvard University, and bids fair to become an important factor in professional education in this country, has been maintained, so far, at his sole expense, he having, with characteristic decision, assumed the whole of an undertaking which was originally intended to be shared between his mother, his uncle and himself, but which, by the death, last summer, of both his mother and his uncle, would have failed, if he had not generously taken on himself the whole burden. Another instance of his interest and thoughtfulness was the way in which, quite as a matter of course, he paid for the furniture and furnishings of the architectural library at the Massachusetts Institute of Technology, which is thus housed in a particularly complete and model fashion.

KYE trust that our readers will allow us to draw their attention once more to the advantages which they can secure for themselves, quite as much as for us, by urging the people who thrust upon them circulars and samples, which are thrown into the rubbish-heap as soon as the door closes upon the person who brings them, to save some of the money which they spend on costly circulars, which are rarely even taken out of the wrappers by those to whom they are sent, and invest it in keeping their names, and the character of their goods, before the architectural public, by means of an advertisement, even though a small one, in the regular professional journal, which is in every office, the standing directory of dealers and manufacturers, which is consulted on every occa-The advertisements in such a journal as this, not only form the directory most readily at hand, but they furnish one always corrected to date. Every architect who has had unusual problems to solve in his buildings knows that the trade directories of dealers in building materials, which are issued at uncertain intervals, are almost obsolete before they are received. The manufacture of new building appliances almost always changes hands several times before they become established and staple articles, and the attempt to trace a meritorious novelty, when an architect has occasion to use it, by means of the trade directories, is nearly hopeless, besides involving a great waste of time in writing to several addresses, before the right one is discovered. The consequence of this is that architects, particularly the busy ones, tend to prefer the stock materials, simply for the reason that they know where to get them, or what name to specify them by; and thus incur the bitter resentment of the manufacturers of new and improved goods, who accuse all architects of being unwilling to look at novelties, when, if the truth were known, it is the manufacturers themselves who put it out of the power of architects to find the novelties that they might like to use, by insisting on presenting their merits by means of circulars only, under the strange delusion that busy professional men, who receive anywhere from a dozen to a hundred circulars a day, relating to different articles, all probably more or less meritorious, peruse these documents attentively, and then file them away where they can immediately find them again when they want them. The fact is that a file of circulars, in the office of an architect of more than five years' practice, is a thing, so far as we can ascertain, unknown. Most architects have probably attempted such a thing, and, discovering, in the course of two or three years, that the file would soon occupy the entire office, have abandoned it; and the more business is done in the office, the more necessary it is to begin every morning's work by getting rid of the heap of circulars that the postman has unloaded on the counter.

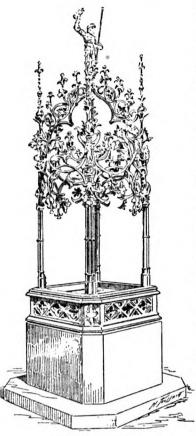
CCASIONALLY, when we mention to a manufacturer of building goods that his cord almost a building goods that his card, always at hand in the advertising columns of our journal, would be much more available for architects wishing to use such goods than the memory of a pile of unopened circulars, we are met by the astounding answer that he does not sell goods to the architects, any way, but to builders, and that it is, therefore, useless to advertise in an architects' periodical. This view of the subject is about as rational as it would be for a dealer in drugs to distribute his circulars among the public, avoiding the medical profession, on the ground that the doctors only wrote prescriptions, and that it was the patients, who bought and paid for the goods, that he wanted to reach, and not the people who merely told his customers what to buy. How many builders, we should like to know, would ever buy any new, or specially meritorious or beautiful building material, unless they were required to do so by the architect's specifications? Is it not evident that the builder's interest and inclination alike urge him to use nothing but the cheapest and most old-fashioned materials that the other party to the contract can be persuaded to accept; and that if he buys anything else, it is only because the architect has demanded it? Before whom, then, should the merits of improved goods be displayed, before the builder, who loathes, on principle, everything of the sort, or before the architect, whose constant effort it is to improve his work, and promote the interest of his clients, by the use of the best and most perfect materials that he knows of, and whose only way of employing such materials is to require in his specifications that the builder shall use them? We cannot see how there should be any doubt as to the answer to these questions, and, in the interest of the architect, the choice of materials and appliances which he finds offered to him, when he wants them, should be as large as possible. Particularly in these days, when the art of fireproof building is developing in this country with extraordinary rapidity, architects need all the resources that can be offered to them in the way of novelties in rolled shapes of iron and steel, new modes of constructing fireproof floors and ceilings, new methods of beam protection, improved cements, new marbles, new qualities and colors of brick and terra-cotta; and they want to know, by simply turning over a leaf in the current number of their professional journal, not by trying to hunt up circulars or calenders, who are the

principal terra-cotta makers, where are the principal stone and marble quarries, who does concrete work, and whether there is any recent improvement in such work; who does copperroofing, and whether it has occurred to any manufacturer, in these days of cheap copper, to furnish roofing-plates of low brass, or some similar alloy, which would be cheaper, harder, and better than pure copper. Certainly, if manufacturers and dealers in such materials expect to have their goods used on a large scale, they must be used through the architects, since all important building contracts are now made in accordance with some architect's specification; and, in order to have them used in this way, they must be brought to the attention of the architects who write the specifications, in such manner that, when the specifications are being written, the name of the thing desired can be ascertained, and inserted in the specification, at a moment's notice.

E have at this moment a call for some white Portland cement, and would be very glad if any of our readers could ment, and would be very glad if any of our readers could tell us where such cement can be procured. It is made in Germany, or at least, a white Portland cement was, at one time, advertised in the German building papers; but we have never heard that any was imported, nor do we know that any is manufactured in this country. As Portland cement is made simply of lime and clay, there ought to be no difficulty in finding a clay which would burn white, and, by mixing this with white limestone, in producing a perfectly white Portland cement, having all the strength and other good qualities of the ordinary dark-colored cement. If such a material could be had, we think that there would be a large demand for it. use of concretes, both for inside and outside work, is extending very rapidly in this country. For inside work, the disagreeable color of the Portland cements has been an insuperable objection to their use, and Keene's cement, a poor and weak material, according to modern ideas, has held its place against them; but Keene's cement is totally unfit for the paving, staircasing and protection of ironwork now required, and a thoroughly reliable cement, of a white, or very light, color, would be a most useful material.

COME of our readers who have occasion to use aluminium, either in their private experimenting, or as a building material, for which, as it seems to us, it is destined to have many applications, may like to know how to solder it with the tools usually within an amateur's reach. As every one who has had anything to do with aluminium knows, it is considered very difficult to solder. Ordinary solder, when melted, runs over it like mercury on a glass plate, and cannot be persuaded to stick to the surface of the metal by any of the usual methods. No flux known will help the matter any, for the reason that the oxide of aluminium, which covers the surface in a thin film, is insoluble in any reagent which will not attack either the metal itself or the solder. There are plenty of recipes, in accordance with which those who are willing to pay a dollar a pound for "aluminium solder," and an extra price for "shop-rights," may have the privilege of trying to make the "solder" stick to the aluminium, but amateurs will generally find it quite sufficient to use ordinary block tin for solder, and secure its adherence to the surface of the aluminium by rubbing the metal, through the solder, which is melted upon it by a spiritlamp or a Bunsen burner, with a wire brush, which removes the oxide so effectually that the melted tin can be spread over the aluminium almost like paint. The best brush to use is one made of bits of aluminium wire, wound with wire, or set in a handle; but steel or hard iron wire will answer. After both the surfaces to be united have been "tinned" in this way, they are held together, and heated until the tin melts. The joint is so strong that the aluminium will sometimes break before it will separate from the solder; and, as block tin is very fusible, the work is easily managed by amateurs. Ordinary plumbers' solder, which contains a large amount of lead, should not be used. Lead has a curious repulsion for aluminium, and, although solder containing it can, with difficulty, be made to attach itself, by means of the wire brush, the joint would be unreliable. If it is desired to harden the solder, silver may be added. It will dissolve readily in the melted tin, and the resulting alloy, which is harder, and somewhat less fusible, according to the proportion of silver, than the pure tin, can be spread with the wire brush with the same facility.

WROUGHT IRONWORK.1—II.



N the seventeenth century, if we can judge by the work of Ma-thurin Jousse, the ironsmith's art was in full vigor. Under the sway of fashion, the old forms were abandoned, but the traditions were perpetuated and the iron, flexed to follow a new curve, nevertheless retained a light and rational appearance; the balconies, stair-railings and spiked fences, the imposts of entrance-doors (Fig. 10) offered a field which was exploited with skill; the sheet-iron was now cut into acanthus leaves instead of feuilles d'eau; initials and armorial bearings in relief came to be common motives. Balance and nobility of composition are the characteristics of the ironwork of the seventeenth century, as may be seen from the balcony shown in Figure 11, and from the outside grille given in Figure 12. A large number of these specimens are still

to be found both in France and abroad; it would be impossible to enumerate them, but we must give a place to the grilles of the Château de Maisons (Fig. 13), now at the Louvre, which represent the triumph of ironwork at this period and which, in



Fig. 10. Grille at Zurich: Seventeenth Century.

spite of their size, yield the palm in no way to chiselled works or productions in gold and silver.

Under Louis XV, wrought-iron was twisted into distorted forms and sheet-iron curled into amazing shapes; on the other

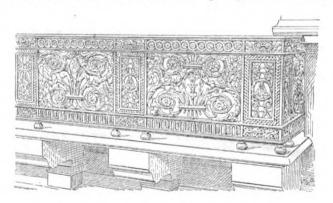


Fig. 11. Balcony at the Louvre: Seventeenth Century.

hand, the joints became mediocre, being made with pins and bolts; processes were concealed and appearance alone was

heeded. The grilles of Nancy (Fig. 14) show the highest point which this style attained; they are the most important



Fig. 14. Grille of the Place Stanislas, Nancy.

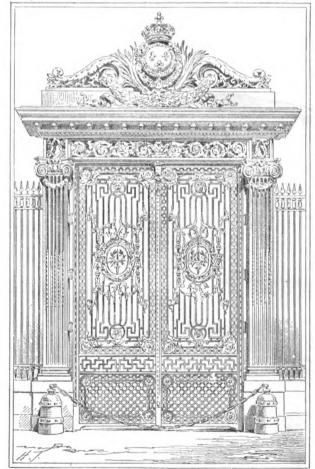


Fig. 16. Grille of the Palais de Justice, Paris: Eighteenth Century.

work of the last century; the minor productions also possess the surprises, the somewhat arch but always spirituel charm

¹ From the French of Henri Nodet, in Planat's Encyclopédie de l'Architecture et de la Construction. Continued from No. 972, page 53.

of this model. Nothing more is required in proof of this than the amusing sign of Figure 15.

With the style of Louis XVI comes a reaction: in their

turn, ironsmiths sought to adopt Roman dispositions and introduce the orders into the arrangement of the grilles (Fig. 16).

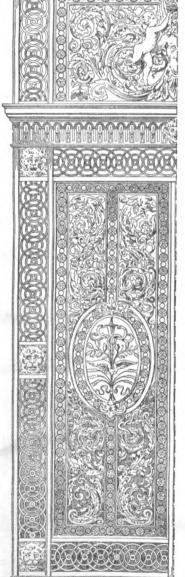
The grille of the Cour du Mai at the Palais de Justice, at Paris, offers a good example of this new disposition; we will not undertake to cite other works with an arrangement of pilasters, since they are numerous; but ordinary ironwork degenerated more and more, and ironworkers, losing all imaginative power, had no other resource than the socalled Grecian ornamentation. The kings, the higher clergy and the great lords were the only ones who succeeded in obtaining anything out of the common order (Fig. 17), as for instance the balustrade of the little Trianon and the communion-rail at Saint-Germainel'Auxerrois.

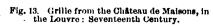
In the seventeenth and eighteenth centuries the part played by fine iron-work gradually be-came less and less important; there is no longer any chiselling except on the knobs of the window-fastenings, and as for the locks, the perfection of the mechanism seems to have increased in proportion as decorative taste and skill diminished.

The introduction of cast-iron dealt the death-blow to the iron-forger's art: deftness of hand disappeared; there are, therefore, no specimens of wrought-iron work belonging to the first forty years of the present century to he cited, for there were then no artisans capable of combin ing and fashioning



Fig. 15. An Eighteenth-Century Sign.





thanks to a more wholesome appreciation of the productions of former times, there has been a genuine revival of the art of | to the present day. - Newbery House Magazine.

forging iron; a number of skilful workmen have sprung up. who are competent to execute the most delicate and complicated work for an architect who finds his patron able

to measure all the advantages which wrought - iron possesses over cast-iron. HENRI NODET.

Fig. 12. Grille at Montpellier : Seventeenth Century.

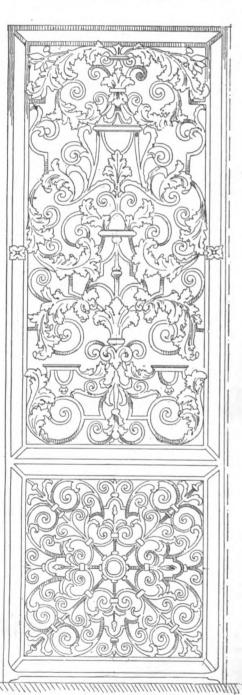


Fig. 17. Gate at Clarendon, Eng.

THE MID-DAY GUN OF S. ANGELO. — All who have been in Rome know how every day at noon a gun is fired from the castle of S. Angelo, the castle of S. Angelo, proclaiming the midday hour, and how this signal is followed, a moment later, by the clash and clang of church bells ringing from every campanile, causing waves of sound to spread over the whole city. This custom dates back to 1456, when Belgrade, then when Belgrade, then the eastern rampart of Europe, was besieged by Mahomet at the head of 150,000 Turks. head of 150,000 Turks. It was freed on August 6, 1457, by Giovanni Uniade, Prince of Transylvania, assisted by the pontifical legate, Cardinal Carvaial, and, above all, by the zeal of Giovanni da Capistrano of the Minor Franciscans, who, using a crucifix hoisted on a pole as his standon a pole as his standard, routed an army of 40,000 combatants. The pope, Calixtus III, The pope, Calixtus III, having rendered solemn thanks to the Almighty for the deliverance of Belgrade, ordered, as a "perpetual remembrance" of the event, that at mid-day event, that at mid-day the church bells should sound three strokes and the faithful repeat the l'ater and Ave ("Hail Mary!") three times, to which he attached an indulgence of three years. Alexander VI renewed and confirmed this custom in the year. renewed and confirmed this custom in the year of the jubilee, 1500, when Bajazette had declared war against the Venetians; the cannon being fired from S. Angelo is a recent innovation introduced by Pins IX. To a like beginning be-longs the habit of ringing the church bells at one o'clock in the morn-ing, that "darkest ing, that "darkest hour before the dawn," inviting all the faithful to repeat the De Profunds (l'salms cxxix) for the souls of the dead: for in 1656, when under the pontifi-cate of Alexander VII, Rome was visited by a Rome was visited by a terrible pestilence; the dead were ferried across the Tiber in boats at 1 A. M. for burial in a field between the piver and the Basilica of St. Paul (a black cross still stands to commemorate the to commemorate the

this work. But
since that time, thanks to the efforts of architects of talent, thanks to a more wholesome appreciation of the productions of the p on behalf of the departed souls, which custom is religiously preserved

THE RELATIONS OF EMPLOYER AND WORKMAN.¹

R. PRESIDENT AND GENTLEMEN OF THE CONVENTION.—
It is a very great pleasure to meet you for the discussion of some of the phases of the labor question, especially when those phases bear upon the relation of employer and employe. A generation ago the discussion of the labor question was exceedingly restricted; it meant a discussion of the question of wages and of working time. To-day it would be impossible, almost, to outline to you in an hour the ramifications of this question; it involves every feature of industry, of the social relations of men, of temperance, and of politics; it is psychological and sociological, because these sides of the labor question comprehend the whole of it.

At your very first convention you declared that the relations of capital and labor were mutual. At that time many of you may not have been aware of the advance you had taken in such a declaration. Previous to that, we always heard in conventions and read in books that the interests of labor and capital were identical. There never was a greater fallacy. They cannot be identical any more than the interests of the purchaser and the seller can be identical, except in so far as one accommodates the other. The interest of the seller is to secure as large a profit as possible. The interest of the buyer to secure goods at as low a price as possible. There is a relation existing between the two, but the relation is reciprocal; it is not identical for both parties. Being reciprocal, what does it involve?

for both parties. Being reciprocal, what does it involve?

The Supreme Architect and Builder, in his wisdom, has managed to create all the units of the universe unlike each other; there are no two of perfect resemblance, except as to species; there are no two leaves of an oak tree exactly alike; there are no two features of men exactly alike; there is a difference, and a fundamental difference, and this exists in the relations of men as well as in the units of creation. It is only men who create and make uniform things. You can east a million bullets without being able to discover the slightest difference between them. You can make a thousand pairs or a million pairs of shoes exactly alike. You can produce millions of tons of iron or of steel with no difference except such as chemical analysis might show; but the Creator has made variety the rule in all his works.

Now this means much in the labor question, and it involves what I like to call the psychology of it, which means that men's minds differ as much as their features, and that in order to bring any harmony into the labor question you must be able to recognize the difference in the other man's mind. While units differ, interests differ also, and this leads every association which cares anything for the elevation of its own character and every body of men which cares anything for its standard of life to understand the means and methods by which the associated units can be brought into harmonious action.

There is another feature which is involved in any discussion of the relation of employer and employé, and that is the difference in the tone and the thought of the age. Individualism, until within a generation or so, was the ruling element—the ruling philosophy. To-day it is altruism. It is that feature of human society which leads each man and each body of men to seek to do something for every other body of men or every other individual; it is that which makes our great associations for the relieving of conditions successful. It is the altruistic spirit as against the individualistic that rules to-day. We cannot get rid of the influence of the tendency if we will; it is utterly impossible to throw yourselves outside of the tendency of the age in which we live. This tendency has brought us from what the political economists call status, to the condition of contract. This is the very greatest element in the development of the labor question from a condition of status fixed under the influence and the customs of society and of industry, to one of contract, whereby each man is at liberty to make such contract with his fellowman as he chooses.

Now the only difficulty of this relative to the labor question is that the workingman is not always at liberty to make such a contract as he chooses, because he is bound by economic conditions out of whose influence he cannot reach. Therefore, the freedom of contract, which is an expression belonging to this age, is one that does not wholly mean exactly what it says. (Applause.) The employer, trained in business practices, independent in his position, must, of necessity, under the present condition of industry, suggest the terms of the contract, and the other man, who seeks to benefit by them, must come to them because he cannot reciprocate by suggesting; if he does, then comes trouble. If the two parties cannot reach the high plane of independent and free contract, then comes the strike, then come the labor difficulties, then come all the wars of industry which we have seen for the past few years, which are as great and terrific almost on one side of the water as on the other.

These questions are things which have nothing whatever to do with commercial systems; they have to do with the minds of men, and the minds of men emphasize the fact that the whole labor question is a psychological one more than it is an economical one; and when we once recognize this principal we are able to reach conclusions which shall broaden and ripen and elevate the whole question into one that is worthy of the consideration of the best men of the

age, and statecraft here, in Europe — everywhere where civilization has gained any strong foothold — is trying to solve the problems which grow out of industry. The emperor of Germany, the English government, the emperor of Austria, the kings of Italy and of Belgium, and the government of the United States — all these powers are to-day seeking through their legislative and executive functions some solution of the difficulties which beset industry. And what will be the outcome? It is far beyond human ken; but the steps which will immediately proceed from these deliberations everywhere can be seen and are being felt. They cannot reach the socialistic side, because socialism means just what some of the solutions of the labor question mean: death to industry. They do mean, however, that the altruistic principle of the day shall be felt as a living force, and in so far as this principle is socialistic you need not fear it. It is nothing that can come politically; it can only come when each man recognizes the rights of every other man and is willing to meet him at least halfway in the adjustment of troubles. (Applause.)

To meet this solution or to help to adjust some of these difficulties, some of the leaders of the land, our very best men morally, broad Christian-minded men, those who are patriotic, and are looking for opportunities in every direction and who are anxious to contribute something to the solution of labor difficulties, are advocating what they are pleased to call "compulsory arbitration." Let us not quarrel with the misnomer: if it is arbitration, it cannot be compulsory; but yet this compulsory arbitration is an expression of their system, and so we will adopt it this afternoon. I have taken some pains to formulate a few illustrations of what compulsory arbitration is. I will give them to you this afternoon, for those of you who have not thought out the problem of compulsory arbitration, for those of you who have thought, maybe, that in this system or method there lies a positive solution of troubles, and that when your men strike or when you lock them out there can be a court by which your differences can be settled independently of action of your own. This compulsory system aims to accomplish that; it aims to accomplish something moral and economical by force, which means just what State socialism means — death to industry; and it is with a view of showing you this side of it, before I touch on that truer arbitration to which your association has been committed, that I give them to you, bearing in mind always that it is a feeling of my own that the time is coming, and speedily too, when either party to a strike or to a lockout will be ashamed of his action in seeking or allowing the trouble to arise. (Applause.)

allowing the trouble to arise. (Applause.)

In the initiative, let it be supposed that A represents the employer. He issues an order to his employés that wages will be reduced ten per cent on a certain day. For the sake of easy calculation, let it be supposed that the wages are \$2 per day on the average in A's works. His proposed reduction then, if carried out, would leave wages at \$1.80 per day. The workmen resist this proposition and insist that they will work no longer for him unless the \$2 per day can be retained. But A issues his order, and the workmen strike. A then appeals to the court of arbitration for his locality, and a summons is issued, under the seal of the court, citing the workmen to appear and answer as to why the demands of the order of A should not be obeyed. If they appear and make answer, all well and good. If they do not, then they will be subject to judgment by default; or, in some cases, the proper officers of the court may bring them bodily into court to answer the allegations of A. But they are brought into court. A presents his case, the employés present theirs, the court makes a decision and upholds A, deciding that he is justified in cutting down the wages of his workmen ten per cent, reducing them from \$2 per day to \$1.80.

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Two results may follow this action. The men, under the decision of the court, acquiesce and return to work at \$1.80 per day, or they refuse to return to work at that price. Then comes the execution of the judgment of the court if the workmen will not obey that judgment. It is levied on them personally or on their property by proper process and by the proper officers of the court. They may be arrested and brought into the factory. If the sheriff or the single officer authorized to serve the execution cannot do it alone, he can summon the posse comitatus. If the posse be insufficient, he can appeal to the governor. The order of the court must be enforced, and all the power of the government brought to enforce it. This means compulsion, and at the point of the bayonet. The men must accede to the decision of the court of arbitration and work for \$1.80 per day, whether they will or not.

Let us instance the reverse. The court decides against A, and

Let us instance the reverse. The court decides against A, and the judgment is that he shall pay \$2 per day. He declines to do so, or he does not obey the judgment of the court. Execution then follows and is served by the proper officer. If he cannot serve it alone, he summons the posse comitatus. If the posse be insufficient, the officer appeals to the governor of the State, and A must continue his works, and with wages at \$2 per day, under the persuading influence of loaded rifles, or the execution may be levied on his property. He must obey, under the rule of compulsory arbitration, the order of the court. In other words, he must pay \$2 per day, when it may be the market cannot be supplied with goods on any such basis. He cannot close his works without disobeying the order of the court; he cannot pay the \$2 per day without loss of his property. Compulsory arbitration then works confiscation. In either of these instances law has stepped in to fix arbitrarily, and to

¹ Address by Hon. Carroll D. Wright, United States Commissioner of the Department of Labor, and read at the eighth Annual Convention of the National Association of Builders, held at Boston, Mass., and printed in the Proceedings of the Convention.

enforce its fixing by all the civil and military power of the State, either the price at which a man shall sell his labor, under penalties, or the price at which the producer shall sell his goods, under penalties. But the plan does not provide that the consumer shall purchase goods at the fixed price, under penalties, which should be done if there is any logic in compulsory arbitration.

What further may occur? The employer submits, it may be, to the judgment of the court, continues the operation of his works, and pays the \$2 per day as ordered by law, although he knows perfectly well that he cannot sell his goods if he disobeys the law. fore, has two methods to which he can resort: first, adulterate his goods to such an extent that he recoups a loss of ten per cent in wages; second, make a "combine" with all other manufacturers of wages; second, make a "combine" with all other manufacturers of like goods to control prices, in order that whenever a court of arbitration decides that certain wages shall be paid there will be no competition, the trust or "combine" regulating the price in accordance with the decrees of the court, and, therefore, caring nothing what the decrees may be, because the consumer must bear the expense of the decree. This means the highest, even prohibitive rates of duty. Or another economic condition may be the result of the decree of the court. rates of duty. Or another economic condition may be the result of the decree of the court. A submits to the decision and continues to pay \$2 per day, and tries to sell his goods in the old way. This allows his neighbor to enter into dangerous competition with him until such time as he is summoned into court and is compelled to abide by the same rules, it thus taking but little time to force the whole industry involved into the trust organization. If the illustration be reversed in all cases to apply to men who strike for higher pay, thus becoming the plaintiff in the action and summoning the manufacturer, the manufacturer must appear or lose the case by default, or, if he does appear, be subject to the decision of the court. It may be a rise of wages would follow, when all the results just indicated would be met.

It does not require much strength of the imagination to see that as each industry becomes involved in the economic results of compulsory arbitration, combination grows more and more severe in all its terms. Every great industry would be forced into the trust through the action of the sheriff, or the posse comitatus under him, or the military force of the State enforcing the decision of its courts, which it is bound to do. The trust represents consolidation, and in the minds of leading socialists is but the stepping-stone to State socialism. If the trust be honestly and faithfully administered in the interests of the public—and this must be the result, or the trust must go under—the State socialist asks: why not create a greater trust and have the Government itself the trustee? This is not the trust and have the Government itself the trustee? This is not the place to argue such a question; but the question may be asked here, whether the advocates of compulsory arbitration are ready to accept the full and logical conclusion of their system by forcing, at the point of the bayonet, all industries under State control, and thereby establish by military force the rule of State socialism.

Would it not be a simpler thing to pass a law regulating the price of every species of goods and putting a penalty upon the consumer that he should not buy except at those prices, and so reach the same result by a quicker process than through compulsory arbitration? and that result is the death of industry and the wiping out of the whole social fabric, which I tell you, gentlemen, depends almost entirely upon the success of industry. If compulsory arbitration does this, is there any reason why it should find any lodgment in the minds of business men or of the people they employ? It is the destruction of that freedom of contract of which I have told you; it is the destruction of all responsibility, moral or otherwise, on the part of the individual man; it is not only a step, but an enormous leap, backward in the whole progress of this age, and it means a system far worse than the feudal system, far worse even than the slave system of the South as it existed prior to the War. There can be no peace, there can be no harmony, there can be no progress industrially or socially, if you resort to such a practice as that which I have so briefly illustrated.

What, then, can you do? What must be done in order to relieve the world partially - for it cannot be done wholly so long as men exist — of the existing antagonism between the two forces which are essential to production, labor and capital? These two terms should always be used impersonally. A difficulty which has existed in the discussion of the labor question lies in the fact that they have been too often used personally, that capital means a man and that labor means another man subject to the first. They should not be used means another man subject to the inst. They should not be used in this sense, but they should be used economically and ethically; they are two forces, each essential to the production of property, each having its functions, each having its rights and privileges; they are relations which cannot be entirely separated, but all the different relations should be fully recognized, and the only principle by which you can carry out the harmonizing of the different views on the subject of production lies through the organization of both forces on such a plan that each shall recognize the rights and the dignity and the privileges of the other. (Applause.)

It is to this that I come as really the main feature of my remarks

this afternoon, and which I wish most to impress upon you. It requires good men. Mr. President and gentlemen, it requires good action upon the highest moral plane, to recognize all the rights of another man. It requires that we should bring into our religion more Godlike men and a less manlike God. It requires that we should bring into our practical and daily work some of the essential principles of the broadest religion; I am not speaking of dogmatic creeds or of theological differences, but of religion, which means in this sense the great moral principles which shall recognize the eleva-tion of the whole people and not simply the temporary advantage of

any class of people.

I have said that there is no solution of these questions. no one feature which can be adopted which will solve all the troubles and remove all the difficulties which beset industry. These difficulties are to my mind to-day more the result of intelligence than of ignorance. We have a great and intelligent body of mechanics in manufacturing countries, made more intelligent through the very features of modern industry. They have been taught that they are free men; they have been taught that they are sovereigns; they have been given political influence; they are the chief factors in society, whether we recognize them as such or not; they have been taught through the schools the principles that surround government; they are interested in the success of government; they are interested in the success of every great feature instituted by men for the benefit of all men. Now with this intelligence on their part they have been studying economic conditions and ethical relations, crudely it may be, but, nevertheless, they have been studying them. If you will study the great difficulties of the labor troubles of the past few years, you will find that, notwithstanding the personal antagonisms which have grown out of them and the real fighting spirit which has been developed by them, there is an intelligence and a comprehension going along, besides the other features, that is really marvelous; and we find that when we remove some of the objectionable features of labor strikes and lockouts there is a basis of justice in the two sides involved and in the public mind which cannot be eradicated. This justice recognizes the power and privilege of every man to seek for himself the best that can be obtained through his environment, to

seek the very best which his opportunity gives him to seek.

You have established, or endeavored to establish, a system of arbitration. It is not that which I have recited to you, but it is that system which forms a part of your organic law; and in this, it seems to me, you have been exceedingly wise to so construct your constitution and to seek to have the constitutions of subordinate bodies so constructed as to recognize the principle of industrial arbitration; and you seek, furthermore, if I understand your programme correctly, to induce the organizations of mechanics that are not in line with you to adopt as a part of their organic law the same great principle. You have not yet succeeded, I am told, and it is not very unreasonable to see why you have not succeeded. It is not very marvelous that you have not been able to carry into effect the principles which you have adopted, and the reason lies in the difference in men's minds and the lack of recognition on the part of all your forces of that very altruistic spirit of which I have spoken. But with arbitration established by which you can have perpetual boards, not meeting too often, this difficulty will be largely overcome. The difficulty which has existed in the Old World and in this country in carrying out true arbitration, the ethical method of settling diffi-culties, has arisen in this very direction. When a strike occurs, there is more or less heat on both sides, and when heat occurs there is a fight ahead; and if you establish your court under a heated condition you are not adopting the wisest method of judging the differences. If the two elements, labor and capital, in your great industry, can have a court in existence to which they can submit their difficulties, a court of cool-headed, calm and judicious men appointed beforehand, you have accomplished in the very start more than half the work.

You remember the old Greek proverb that the beginning is always half the task. When you have put your hand to the plough, when you have started a great institution, you have accomplished half the object which you sought in the first days to secure. So, if you have a judiciously-selected board of arbitration, a board which shall comprehend all the elements of the business to be submitted to it, not an outside board of people who know nothing whatever of your line of business, but a board constituted of members on both sides, then you have accomplished half the work toward securing success. If, then, you submit your difficulties to this board, you will have secured something which arbitration aims at securing. You have taken a long step in advance. You have recognized the rights of other men, and the moment one man recognizes the rights of another, that man is a better man than he was before; he has developed a moral side of which he was not aware.

In the old time the fight of life was for existence, and if I did not kill you; you killed me. Then came the next fight; it was a fight for substance, and if I could not get your substance, you took mine. Those old conditions have passed and are gone, and these very conditions of modern thought, of men recognizing each the rights of the other, are the principles which underlie the whole business of arbitration. Every society which has established a court of arbitration or a board, as it is better to call it, upon conditions of equal rights has been more or less successful.

Greater success will come in the future than has been experienced in the past. You can refer now to this settlement of the great Lehigh trouble and of the great coal strike in England. These are Lehigh trouble and of the great coal strike in England.

past troubles which have come to a peaceful and satisfactory conclusion through the offices of a judicious board of arbitration. There is something which I like which precedes arbitration, and that is conciliation, where neither party resorts to any board, but each meets the other in that friendly spirit which should always exist; and, sometimes, when conciliation along the lines of economic

principles cannot be reached, a little shrewd diplomacy without the loss of principles will accomplish the whole thing and avert a strike.

I remember a few years ago, in the city of Lynn, in this State, where I once lived, there occurred a strike on the part of the lasters, which is a pretty influential body, as you know, those of you who come from Lynn, which is a shoe town. An employer there had secured the services of a laster who was not a member of the lasters' association, and the next morning a committee of lasters waited upon the employer and said to him: "You must discharge this non-union man." "Oh, all right," he said, "I have no objections." "And you must put in his place the man you previously discharged." "Very well," he said, "I will do that." Now the man that he had previously discharged was a union man and was a very poor laster; and so he put him at work again the next morning just as the committee requested, but he put a skilful laster alongside of him, a union man, whose sole business was to unlast the shoes as fast as the union man lasted them; and the result was that before long the whole trouble had disappeared and the reinstated laster left the works of his own accord and left the town. A little bit of shrewdness like that averted a long and disastrous strike.

And another instance which came under my own observation was where a manufacturer of shoes in this city — he was a maker of custom shoes who conducted a very high-toned establishment and he was an Englishman — secured one day the services of a foreman who was an Irishman. The journeymen in the shop were nearly all Englishmen as well as the proprietor, and the next morning they waited on the proprietor and said: "We don't propose to work under this foreman." "Why, isn't he a good foreman? Doesn't he know his business?" "Yes, sir; but he is an Irishman and we don't propose to work under him and you must discharge him." "Oh, very well," he said; "you would work under me if I was an Irishman and the proprietor of the establishment, wouldn't you?" "Yes, sir." "Very well; I will fix this thing." "All right, sir." So the next morning he took the foreman into partnership with him and that ended the whole business. (Laughter.) But had he been obstinate, had he been as unreasonable as his journeymen, there would have been a strike in his shop which would have been as disastrous to him as to them. A little bit of diplomacy, so long as principle is not sacrificed, will save many a strike.

I remember another case in Lawrence where, a few years ago, the employés in a great textile factory struck, and enough common-sense to put on your little finger end would have saved the whole business and have prevented three months of idleness on the part of fifteen hundred operatives, but that sense did not come until each side was exhausted and sick of the whole business.

Now I know the liberality of the great industry which you gentlemen represent. There has been no greater advance along the lines of the labor problem in its many ramifications than has been achieved by your own industry. You have been the first to grant a shorter day of work. You have been the first to add to the leisure time of your people; you have been the first, perhaps reluctantly, but certainly the first, to grant this demanded privilege, and while you have had strikes and while, as I know perfectly well, the cost of construction of a building has not been reduced always by that reduction of time, but increased in some cases and perhaps all, nevertheless, you have added something to the dignity of the men you employ and you have added something to your own dignity and to your appreciation of the wants of others.

All these great movements have an ethical power. There has been much antagonism against a certain great street railway corporation of this city during the past four or five years and yet that corporation has accomplished that which, if I could accomplish it alone and personally for the workers of this country, I would be willing to lay down my life instantly for the results gained; and that privilege was one single half-hour added to the workingman's day without any increased cost by the use of electricity on our street railways, by which the workingman can come into this city from the suburbs in one-half or less time than he could have come before, and he has thus had that half-hour added to his day without detracting anything from his economic force.

If there is anything to be gained by concessions without any forfeiture of principle, if there is any benefit to be secured to the individual by elevating him morally and intellectually, it is the duty of industry everywhere to do it; it is the duty of industry to see to it that the man who works for his living, the man who works for daily wages, is a freeborn man, who can make his contracts as freely and who can suggest the terms of contract to be considered as freely, as can the man on the other side. (Applause.) This is the ultimate work of the present generation. What the work of the next generation will be, growing out of arbitration, it is hard to say. There are various other systems which, bear in mind, gentlemen, are only ameliorative and not conclusive, and if, out of all these and the concessions of men on both sides, there can grow up a new system of industry by which the iron law of wages can be removed, by which society and industry can each bear its burden and bear it cheerfully, then there will come an age when industry will be more prosperous than ever, when each man will secure a comfort in this life that he has not been yet able to secure, when there will be freedom from harsh economic laws, freedom from entanglements, freedom from antagonisms, and freedom from industrial wars. Until that time there will be these wars, there will be these crises

and industrial antagonisms, and all that we or any other body of business men or any body of teachers can do is to help bring out the better system, the better understanding, the better age of freedom of contract, until we reverse the old rule which was from status to contract and step back again from contract to a higher status. This should be the aim of every body of business men. This is the acme, industrially speaking, of the whole altruistic principle of the age, and to this I feel sure you will dedicate yourselves anew and endeavor by all the influence in your power to bring about not the millennium, but better conditions.



ACCRUING TO THE WORLD'S FAIR FROM ITS SIDE-SHOWS. — ANOTHER EXAMPLE OF CHICAGO'S METHOD OF BUILDING.

ALL through the month of July the one topic that has seemed to overshadow all others, here as well as all over the country, has naturally been the strikes, the interest of the general public centering around the struggle connected with Pullman and the railroads. There has seemed to exist absolutely no other interest, and business as well as any special enterprise connected with the city has been practically at a standstill. Even if a topic was being brought up before the public, which at any other time would have created lively interest, it has been dispatched by a short column in the newspapers, and has hardly aroused comment at all in general conversation. If things looked quiet in architects' offices last spring, the fall prospect is still more discouraging. Most excellent draughtsmen are thankful to take work at one-half their usual wages. There has been, as is of course known, much talk of a general strike among the building-trades. The papers came out with loud headings, such as "Mighty Struggle On," "All Labor May Stop," "Knights of Labor Eager," etc., etc., and indeed committees from one hundred trades-unions met and discussed the advisability of a general sympathetic tie-up. Among this hundred and twenty-six, unions were represented that, should the strike have become general, would have materially effected what building interest is yet alive. These unions were the Carpenters' Council, the Painters' District Council, Iron-Moulders' Council, Building-Trades' Council, Steam-Fitters', Stone-Cutters', Gas-fitters', Mosaic Workers', Tin and Sheet-Iron Workers', Cornice-Workers', Hod-Carriers', Plasterers', Hoisting Engineers', Junior Plumbers', Journeymen Plumbers', Gravel Roofers', Architectural Iron-Workers', Bridge and Structural Iron-Workers', Bricklayers', Tile-layers', Steam-fitters', Helpers, Electric Workers', Carpenters' Council No. 1, Hardwood Finishers' No. 1, Cabinet-Makers', Metal Trades' Council.

That such a sympathetic strike could ever have been contemplated seemed the wildest folly, and public sympathy in general seemed extended to the workmen, who were finding in the unions a harder and more grinding taskmaster than the wildest fanatic could have pictured for them in capital. Last winter was a hard winter for the laborer, and this summer was looked upon as a time when, it was to be hoped, more work would be forthcoming, to prepare for another winter's siege. Right or wrong, sympathizing or totally at variance with the views held by the strikers, the situation is a pitiful and discouraging one. The general calling off of all labor-unions was, as is known, given up, not in a flat, square-footed way, but as a gradual and hardly perceptible retreat, till suddenly it became apparent that no strike was in progress. The painters were actually the only ones who stopped work, and they only for a day. As these men were without personal grievance, and only struck through sympathy for the Pullman men, it was rather a ridiculous feature of the performance that during this one day that they were away from their work the men who applied for their places were Pullman men. Pullman men were also the ones who took the places of the striking painters last spring during their tie-up. Such action does not lead one to believe that the workmen are heartily in accord always with the orders issued by the head men of their unions.

One event of this month, which at any other time might have created a good deal of excitement, was the total destruction by fire of nearly all the World's Fair buildings. The origin of the fire is unknown, except that in a general way it is put down to incendiarism, and curiously enough there has been absolutely no discussion of the matter. The fire was discovered by the ubiquitous small boy, and it is highly probable it was the work of some of the lawless characters who during this time of anarchy have flocked to our city. Whatever may have been the cause, with the exception of the northern part, the beautiful White City now lies a blackened heap of ruins, only the gilded figure of the Republic, stretching forth her arms over the scene of desolation, stands as if typical of the fact that in the midst of assailing evils, which even to the most optimistic give ample cause for alarm, the Republic shall stand unscathed and unharmed. The fire first attacked the Terminal Station, being discovered at about 6 P. M., as above stated, by some small boys who

at first attempted to stamp it out. It was not long, however, before the fire got inside of the building, and the fate of the place was We have had an exceptionally dry, hot summer buildings burned like tinder. A large part of the city fire-department was called out, but in view of the highly inflammable material of the structures and the high wind blowing at the time, it could do very little or nothing to save them. Remembering the disaster of the Cold storage Warehouse, the men took no risks in mounting to the roofs and higher portions of the buildings, though they had several narrow escapes from simply being hemmed in by the flames, so rapid was the progress of the fire. Before the last column had toppled over from the Terminal Station, the flames had attacked the dome of the Administration Building, shooting up through the opening at the top with a rush and roar like the escaping flames and repress from a volcane. It could not have been much more than vapors from a volcano. It could not have been much more than fifteen minutes before the entire building was one mass of flames, fifteen minutes before the entire building was one mass of flames, darting high into the air and illuminating the country for miles around. With a deafening crash the dome fell and the fire leaped to the Electrical Building, while it almost simultaneously broke forth in the Mines and Mining Building. People may have thought they had seen fires, especially those Chicago people whose memories date back to a little over twenty years ago, but never before has there been a more gorgeous fiery spectacle than this of July 5, at Jackgrap Park. son Park. As last summer, in its completeness, the Fair stood one of the grandest and most beautiful sights of modern times, so also in its destruction it was equally impressive. The final end of the Mines and Mining Building came in the shape of a tremendous explosion which blew out the east wall, and by the time this structure had fallen in, the flying brands had set fire to the Manufactures Building. It took about an hour for the fire to do its work on this huge roof, and the great iron girders were twisted and warped out of all recognizable shape. While this structure was on fire, the flames were doing their work on the Agricultural Building and Machinery Hall. The south ends of the Government and Trans-Machinery Hall. The south ends of the Government and Transportation Buildings were scorched and burned, so that the Horticultural Hall and the Field Museum are the only large structures which stand unharmed. The loss, eighty thousand dollars, falls on the Columbian Exposition Salvage Company. Of the seven large buildings mentioned, the destruction is entire, there being absolutely no salvage. The iron beams and girders are either twisted into shapeless masses, or melted down into equally shapeless heaps, and thus has vanished from the face of the earth the most beautiful group of buildings of modern times, and because of all the disturbances of the present month, the fact has hardly been commented on. Of course, it was only a matter of a short time how long they should stand at best, and this idea has tempered any regret there might be felt over their disappearance.

One rather interesting report from the World's Fair is that showing the amount of money received by the Exposition Company from the different concessions. The whole amount of money received was \$3.543.512. The largest amount paid by any one concession was \$309.927, paid by the Wellington Catering Company, while the smallest was one cent for some sort of cap ribbons. Of the Midway Plaisance shows, the Street in Cairo turned in the largest amount, \$148,491 being the percentage received from that. The Ferris Wheel and Hagenback's Menagerie stand next in the list of paying wheel and Hagenback's Menagerie stand next in the list of paying investments, as they turned over to the Exposition Company \$127, 975 and \$125,529, respectively. The German Village and the Moorish Palace are the only other concessions of the Midway which netted over a hundred thousand to the Company, and it is rather surprising to note that while the percentage from the German Village was \$114,927, Old Vienna, where an entrance fee was charged, only turned over some ninety-six odd thousand.

Greenland's Icy Mountains in the shape of the Esquimaux Village Greenland's Icy Mountains in the snape of the Esquimaux Village placed in the treasury some thirty-eight thousands of dollars, and in attractiveness beat Afric's Sunny Fountain, in the form of the Dahomey Village, just about ten thousand. The Street in Constantinople stepped in with another thirty-eight thousand dollars and that most flimsy of all the concessions, the Beauty Show, did nearly as well. The Java Village brought in over thirty-three thousand, while the rival Irish Villages show a difference of over fifteen thousand in the amount of money handed over, the Aberdeen producing twenty thousand for the Company, while the Hart only netted it five thousand. In the slot-machines the charms of music were entirely scalipsed by the Stochurck's delicious little squares of chocolate, as the phonographs brought in \$1,189, while the chocolate turned over \$1,037. The electric launches proved a source of income to the amount of \$112,370, while the wheel-chairs only netted about seventy-five thousand to the Exposition. The Intermural Railway turned over the goodly sum of \$136,421, which shows that the Company probably lost nothing by the less grasping policy which it inaugurated after the early part of the season. This proves true in the majority of cases where the concessionaires were not too eager for the everpresent quarter.

One curious example of the method used in the construction of large buildings in Chicago is to be seen on the corner of State and Washington Streets, where a twelve or fourteen story building is being erected over the first story prepared for it several years ago, and in which, at present, part of one of our largest dry-goods stores is doing business, without any inconvenience to either customers or employers. A stout balcony is built at the second story and this not only protects the sidewalk and entrances, but also serves to hold building-material. Not only is the present structure being thus erected, but the old one, a four or five storied building, was torn down, with the same minimum of inconvenience to those around. It is really remarkable how well such work is managed. The new building is probably the last one to be erected from plans in which the late John W. Root had any share.

Another large building about to be erected is a Temple of Music. It is reported the structure will be ten stories high, in the style of the Italian Renaissance, with the material of terra-cotta and Roman brick. The first story is to be arranged for store purposes, while the second and third stories will be devoted to a recital hall. Above this, through the tenth story, the rooms will be arranged for music

THE PLANNING OF HOSPITALS.1

NE cannot speak properly of the planning of hospitals without including much that does not strictly belong within the province of the student of Architecture. You will pardon me, therefore, if I open these remarks with statements and explanations bearing upon the subject which are derived from such medical authorities in hospital science as are well known to fame in this connection.

What follows is not said to undervalue the work which has been done by the medical specialists, but to awaken thought in a new

direction for the benefit of our own profession, to whom the business of designing all kinds of buildings legitimately belongs.

One of the objects of this lecture is to suggest to the young minds before me the possibility of an improvement in hospital building, which would spring up if the architect should so fit himself by early and careful training for the special work of designing self by early and careful training for the special work of designing and constructing hospitals. Granted that a hospital is a machine, if you will, it seems reasonable that it may be and ought to be an agreeable looking machine, and that there is nothing in Nature or Art to prevent the architect from understanding and producing it.

Whether working with a specialist, or as a specialist, it becomes the architect, who must remain the authorized interpreter to the workmen of all drawings and specifications, to know the value of and the reason for every line and every word that they contain. and the reason for every line and every word that they contain. Furthermore, he is often called upon to be accountable, and sometimes the accounting head, in carrying on the works. Over and above all these points, he has the artist's responsibility in the case, to give the building or group of buildings whatever of artistic character may be possible, or under the most unfavorable circumstances, to see that the result shall not develop as a blot or an eye-sore.

The history of heavitals up to wagent times is rather mythical.

The history of hospitals up to recent times is rather mythical; Egypt, India, Greece and Rome are all said to have had something of the kind. While the subject is one of great interest, there is too much of uncertainty and mere conjecture surrounding it, to yield much profit to the general student. You will find about all there is to be found, and more than is valuable, in Burdett's book.²

HOSPITAL.

The English word "hospital," has been and still is, used in a double sense, viz.:—"As a place of medical treatment, and also as a retreat for the poor, the infirm, etc.— Encyclopedia Britanica." Burdett in his great book uses two terms; the title is "Hospitals and Asylums of the World."

The late Dr. Kirkbride deviated from the English nomenclature,

with regard to establishments for the care of the insane: these in England are usually called "asylums." Following Dr. Kirkbride, the term "Hospital for the Insane" is generally used in this country to indicate that the institution is for the purpose of treatment of insanity as a disease with a view to its cure, and not as a mere shelter for its inmates.

What I have now in mind to speak of more particularly is the hospital for the treatment of the sick and wounded.

Originally the word hospital meant, as the word asylum now means, a place of shelter for the poor and helpless only; now it has the included meaning of treatment and restoration; the inmate of an asylum may or may not be a patient, the inmate of a hospital proper is always a patient, and the rich as well as the poor avail themselves of the benefits of hospital treatment. There is good reason to believe that in many cases, especially those of a surgical character, a well-organized hospital possesses great advantages over the best equipped private house. All difficult and dangerous operations can be there performed under conditions more favorable than at home. So that the hospital manager, the doctor and the architect must work together to improve this life-saving and lifelengthening apparatus, and the best equipped man for the work ought to be the architect.

HOTEL DIEU.

It is only within comparatively recent years, that scientific pro-It is only within comparatively recent years, that scientine progress has been made in the organization of hospital management and the construction of hospital buildings. France appears to have taken the lead, but England and America are now well abreast, if not ahead. The old Hôtel Dieu at times during the last century held five thousand patients. As many as six people were laid in one bed. The buildings occupied only a little over three English

¹A lecture delivered before the Architectural Department of the University of Pennsylvania, by Addison Hutton, architect.

^{2"} Hospitals and Asylums of the World," by H. C. Burdett, London: J. & A. Churchill.

acres, so that each inmate of this "House of God," was allotted about thirty square feet of the earth's surface whereon to live and breathe. You will better appreciate the extent of this crowding, when told that each inhabitant of the City of Paris has 430 square feet, and of the Cit, of London about double this area, or over 800 square feet. There is some satisfaction in knowing that the present Hôtel Dieu gives each patient 311 square feet, although this is a very short allowance according to the present advanced idea of the proper ratio.

The earliest record of hospital building in England states that in the eleventh century two were founded by the Archbishop of Can-

terbury, Lanfranc by name.

About fifty important hospitals were founded in England, Ireland and Scotland during the eighteenth century, which shows a wonderful movement in the intentions of benevolence. The earliest hospital in North America is the Hôtel du Precieux Sang, built in 1638, and the next in order of time, the Pennsylvania Hospital in Philadelphia, the east wing of which was built in 1755.

Before the Revolution of 1789 the French had begun to devise

special plans, but that terrible event intervened, and no tangible improvement grew out of their thought and invention, until the Lariboisiere was begun in the reign of Louis Phillipe. Singularly Lariboisiere was begun in the reign of Louis Phillipe. Singularly enough, the Revolution of 1848 interfered with the building of that, and it was not completed until the year 1854.

When the Episcopal Hospital in Philadelphia was designed in 1859, the Lariboisiere was considered by its projectors as the best existing model to be followed. I may say it was not strictly followed; but in all essential features it is probably the best hospital building which was erected at or before that period. Its benefits came into full play in our Civil War.

THE JOHNS HOPKINS.

The plans of Johns Hopkins Hospital in Baltimore, recently published by Dr. Billings, illustrate more fully than any other yet built, the thorough study of the subject which is being given in modern times. It is in effect from the medical point of view, an ideal hospital. No thought, time, trouble or expense was spared to deal hospital. No thought, time, trouble or expense was spared to make it so; to carry into practice the most advanced ideas of hospital design and construction. I shall refer to this frequently as it is a convenient landmark and object lesson. There can be no objection to doing so, as the plans by their publication have become common property. If a copy of Dr. Billing's book is not already in your library, it ought to be placed there.

In the Johns Hopkins Hospital, beyond the Administration and Pay Wards, it is difficult to discover the touch of the artist. Architecture as an art seems to have been subordinated to the de-

Architecture as an art seems to have been subordinated to the demands of hospital science, and any thought of architectural beauty in the treatment of the external appearance of the common wards, particularly ignored. I wish to suggest the point that there are no compelling requisites of size, proportion or detail in hospital plans, that may not be softened and rounded by artistic care, so as to give token of regard for beauty.

Passing by the colleteral reads all of which cares into the all-

Passing by the collateral needs, all of which enter into the planraising by the constern needs, an of which enter into the planning of hospitals, such as the Departments for Administration, for Clinical teaching, for Training of Nurses, for Out-Patient service, for Isolating purposes, for the Pathological work, for Cooking and Washing, our present business will be with the arrangement and construction of a proper hospital ward, with its inseparable adjuncts. adjuncts.

TERMS.

A room furnished with a bed or beds to receive patients is called a Ward; for many reasons it has been found satisfactory within a Ward; for many reasons it has been found satisfactory within economic limits to place from ten to thirty patients in one room and this room is called the Main Ward, and if the hospital contains more than one, they are numbered 1, 2, 3, etc. They are also spoken of by the attending physicians and nurses as Medical Ward, Surgical Ward, etc., according to the use. But it is not necessary to make this distinction in connection with planning. The needs of a Surgical Ward are the most exacting; if we plan properly for that, we shall cover the ground for all requirements, except for cases where special isolation is required. In the Massachusetts General the Bradlee Ward is designed on isolating principles, a special ward for abdom-Ward is designed on isolating principles, a special ward for abdominal and cerebral cases.

But I wish to confine your attention just now to that unit of a hospital which is, or should be in emergency, a complete hospital in itself and is called, for convenience, a pavilion. This consists of two parts, the main ward and the head-house, as well separated from each other as the nature of their relations will permit. Under certain regulations it is now conceded that another ward and headhouse may be superimposed, making a two-story pavilion. There has been much discussion as to the advantages and disadvantages of two-story pavilions; there was a period when the authorities told us that the one-story only could be the proper thing. The Johns Hopkins built some of each and it may be supposed is now making a record of comparative results.

We will consider now the Main Ward. Its floor-area should have a minimum of one hundred square feet per bed, and it is believed

that no ward ought to have over thirty beds. If we fix the clear height at twelve feet, which is probably the minimum that should be allowed, we have twelve hundred cubic feet per patient. This is a fair standard of practice in the climate of Philadelphia, provided reasonable attention is given to the means of winter ventilation. The glass surface for the windows should not vary much from twenty square feet per patient, although this may be considerably decreased in more northern latitudes and on stormy exposures.

The usual form of the ward is an oblong parallelogram of about twenty-five feet in width; this is enough when eight feet length per bed is allowed. Some have been made of greater width; the Johns Hopkins wards are twenty-eight feet wide, with seven feet wall length per bed. The wards in the Episcopal Hospital are, I believe, fully thirty feet wide in the clear, but this width in a long ward is now considered excessive.

Some of the modern English hospitals have very pretty circular wards with ventilating stacks in the middle, and it is a matter of some surprise that octagonal wards, such as one built in the Johns Hopkins, have not been more usually adopted. In the Massachusetts General, built in or about 1820, the wards are nearly equal sided with a great chimney-stack in the middle. A modification of this, except that the sides are extended and the corners are cut away to form an irregular octagon, may be seen in the new wards of the Pennsylvania Hospital.

These wider wards with the central chimney, whether square, round, or octagonal, present some marked advantages in the matter of ventilation, and are especially desirable when there is a super-imposed ward. Later on, I hope to recur to this.

SITE AND ORIENTATION.

In choosing a hospital site, the quality of the soil, the facility of In choosing a hospital site, the quality of the soil, the facility of water-supply and drainage should be carefully attended to. But an important care and duty of the architect is to regulate the orientation of the wards. These, invariably, ought to be placed on the south side of the connecting corridor, and when oblong, should have the axis as nearly on the meridian as possible.

Thus every day of the year in which the sun shines, at least three walls of a rectangular ward will be bathed in sunshine. This is good for the patients, good for the building, good for warmth, and good for ventilation.

good for ventilation.

SPACING OF WARDS.

With the orientation just described, the interval between wards may be smaller than in any other. Thus, if a one-story ward be fourteen feet from the first floor to the eaves, the space between wards may be twenty-eight feet; if there is a superimposed ward, this interval should be much greater.

HEAD-HOUSE.

As the ward is the essential part of the hospital, it has claimed our attention thus far. But food, clothing, water and drainage are important and must be available, in a hospital as elsewhere. A section of the pavilion is isolated as nearly as possible from the ward by the cross-corridor, through which, as often and as long as possible, fresh outside air is allowed to pass. On the north side of the corridor, supposing the orientation to be regular, is placed the Head-

House, containing the numerous adjuncts which go to make each pavilion a complete hospital in itself.

Here are placed the stairs, the service-room through which is served all food, (which comes — in a large hospital — from a remote kitchen, by way of the basement-corridor), the clothing-room, the linen-room, the nurses' duty room, the bath-room, the waterclosets, and, if practicable, one or more special rooms or wards for

single beds.

VENTILATION.

All the water fixtures are arranged for special artificial ventila-tion separate from the Ward ventilation. Keep fairly in mind that the governing thought, difficult to put into execution in our climate, is primarily to isolate the ward, by means of air currents, from the head-house, and each pavilion from its neighbors as much as possible; and that inside of the head-house (or outside of it, as as possible; and that hiside of the head-house (or obtaine of it, as you may sometimes find it necessary), the drainage fixtures must be further isolated by a well-formed air-passage, flushed as frequently and as much as possible with fresh external air. Another help in natural ventilation is the peculiar window which has a transom at two feet from the top, the sash of which is hinged at bottom to open inward to admit fresh air at the top, which is thus admitted and impelled in mild weather into the room toward the ceiling, without danger of too much draught on the patient.

You may find under some conditions that it will be necessary to tou may and under some conditions that it will be necessary to control the ventilation, especially in winter, by fan pressure, but this should not happen in a new enterprise, where the conditions of selection of site and orientation can be controlled or regulated. But you will be called sometimes to enlarge, alter or extend existing hospitals, and you will then be glad to draw on all resources within

your reach.

ASPIRATING FLUE.

It will generally be found best to construct a large single venti-lating flue for each ward with openings into it at floor and ceiling. This is rendered active by a coil of pipe heated with steam all the



year round. Such a flue cannot be placed within the lines of the long narrow ward, but may be placed in the head-house or lobby as in the Johns Hopkins. It involves long ducts both under and over the ward, and places a serious difficulty in the way of a second-story ward. Owing to the great length of the horizontal ducts and branches, it would seem that the effective draught would differ

much between the near and distant parts of the ward.

In the wider ward having a central stack such as the octagonal wards of the Johns Hopkins, the square wards of the Massachusetts General, and the wide Memorial Wards of the Pennsylvania, the central ventilating-stack will undoubtedly perform more thorough work in a more economical manner. The steam pipes and coils are made accessible by means of a ladder from the basement to the

A separate flue of the same description, in which steam, water and drain-pipes are placed, ventilates the water-closets; the other parts of the head-house are ventilated by flues, collected into a separate common head, having steam coils like the rest.

WARMING.

Volumes have been written on warming in connection with the subject of ventilation. Merchants, manufacturers, doctors, lawyers, and engineers, from time to time have burdened the world with new books. It is nearly safe to say that nobody in a Northern climate has ever been thoroughly and continuously satisfied with his warming-apparatus. So I will not startle you by saying that such a hospital or such a house has a thoroughly satisfactory apparatus. What is to be brought forth hereafter in electrical invention, no one can safely predict; nothing yet has appeared to supersede the appliances through which steam for fifty or sixty years past has been found clumsily effective.

At the Johns Hopkins both steam and hot-water appliances are at in. This has been done to solve experimentally the question as to which is better. In the other hospitals within my knowledge,

steam alone is applied.

Almost invariably, east-iron radiators, which now largely take the place of the old pipe coils, are placed in the basement, at the bottom of the hot-air flues. Fresh air brought from the outside at least six feet from the ground passes over these radiators, and be-coming warmed is discharged through metal-lined flues into the ward or wards above. The area of these flues is reckoned for this latitude at about 100 square inches per patient, and the area for ventilation, by the means already referred to, should not be materially different. An important feature in any method of warming is the management of the admitted air. Whether the winter weather be cold or mild, the inflow of air to the ward should be

This is done by a mixing damper, so placed that by a single movement, the flow of hot air is diminished, the flow of cold air increased; the two volumes thus thrown together, mixed and tempered, are delivered into the ward. By means of an actuating chain or rod, this movement of the damper is performed by the nurse without leaving

With this tempering arrangement for inflow, and proper openings for outflow at floor and ceiling,—those at floor are always open, those at ceiling controlled by registers, so that the air may be changed and the temperature promptly lowered on occasion; extraordinary care is not required to keep the ward at the proper temperature.

I ought to mention that the inlets for warm air are better placed under the windows: the windows are the coldest points in the room; and as the greatest space between beds is opposite the windows, the danger of draughts on the beds is thus minimized.

CONSTRUCTION.

In speaking of the construction of the hospital, I will refer only features as are especially important in this class of building. Of course, hospital construction in most particulars may be, and usually is, the same as in other buildings of the better class.

The foundations should be laid with stone and cement, and there should be a damp-proof course of asphaltum or slate at the ground line. In some soils the foundations should be drained with tiles;

in those of sand or gravel this is not necessary.

So far as is ascertained, there is no better material for walls than brick. All interior partition-walls ought to be brick. The weatherbarriers should be formed of two nine inch walls with two-inch airspace, well bonded at all jambs and corners. An excellent alternative is an eighteen-inch solid wall with hollow lining of terra-cotta, whereon the wall-plaster is laid. Either of these devices will insure dryness of the internal wall-surface.

A principle to be followed as carefully as possible in hospital building is to leave as few cavities in the construction as consistent with the conditions of integrity and endurance.

Every surface should be solid and smooth as practicable, and thus

easily and freely cleansed and kept clean.

When floors are constructed in the usual manner, the intervals between joists may be filled with mineral wool. This helps to deaden sound, leaves no harbor for rodents, or any other offensive thing. Still better, where the appropriation of funds will permit it, the floor should have bones of iron or steel filled-in with bricks. The nailings for the surface-floor will thus rest on a bed of iron and burnt clay; again the mineral wool comes into play between the

nailings or sleepers. The surface-floors must be hard wood; nothing is better than the Southern yellow or pitch pine, which, when cut and dressed to show the edge-grain, makes a handsome and most serviceable floor. A good, tight, smooth, well-finished floor is most important; parrafine and soluble-glass are recommended as coatings. The joining to the wall is best with a neat wooden cove, the usual high wooden base-skirting being omitted. In fact, only such inside wood-work as is absolutely necessary is recommended in the best hospital construction. The window-jambs and heads may be rounded or chamfered in plaster, and the window-sills rubbed slate. The floors and parts of the walls of the water-rooms are lined

with pottery tiles, and all angles give place to curves, concave or

It is best that stairs shall have iron construction, and if slatetreads come within the appropriation, they are to be preferred to

The plastering of the walls and ceilings should have great care bestowed upon it. The surface should be left with what is known as hard-finish, composed of lime, sand, and much labor. Where lath are commonly needed, such as on ceilings, etc., stiffened wire-net-ting should be substituted.

At all internal points, and in all materials, whether stone, brick, wood, pottery, plaster or metal, constant attention should be given to the avoidance of open joints, sharp corners, quirks and creases. The exclusion from the interior of the ward of all architectural decoration may be a part of the reason why in recent times there has been a disposition to exclude the architect himself.

If I have seemed to take up much time in dwelling on what might

be called the peculiarities of hospital building, I assure you I have done so with the general purpose of outlining the subject, as it were, by simply touching on some of the details in a way that may attract your attention, with the thought that some of you might in the future take up the designing of hospitals as a specialty. Be assured that the subject is a large one; thousands of volumes have been written upon it; new discoveries in medical and surgical science are modifying the older theories, so that one needs to keep abreast with daily progress. For those who have a certain combination of mechanical with artistic genius, it would certainly prove exceedingly interesting, and possibly profitable in fame and money.

The increase of material wealth of the people of this country,

the inevitable poverty and suffering which travel on foot alongside of the chariot of wealth, are the two factors which will more and more conduce to the founding of institutions for the charitable care of the sick and suffering. Then as science prospers and proves what it is capable of, in healing and minimizing pain, the rich and well-to-do will patronize such establishments in which they can be better relieved and cured than in their own homes, and will add lib-

erally to the means of supporting them.

I am the more moved to speak as I do, because some of the medical advisers have strongly intimated their disregard for architectural beauty, as if it were not worth an effort. I plead that the skill of the architect can modify the appearance of almost anything having walls, windows and roof, so as to render it a thing inoffensive, and with perhaps a slight addition to the expense, a thing of beauty.

M. Tollet, a French writer on hospitals, thinks that the ogival or

Gothic form of architecture was adopted in the Middle Ages, as much for sanitary as for architectural reasons. Whether he be correct or not (it appears to be a conjecture only), this writer sees no objection to its use, except that it does not seem to lend itself so readto the rigid conditions imposed by modern sanitary science.

But there is one point worth noting in regard to this. Doctors, for a wonder, do not differ in their recommendations for top ventilation; in one-story wards this easily becomes what is termed ridge ventilation. In all wards it is very desirable to slope the ceiling upwards from the sides to the middle. So that we have in the ceiling of any ward, especially of the one-story ward, a hint of Gothic which might well be followed in the external architecture of the building.

If one were requested to design a hospital group in the Gothic style, he should not seriously resist the pressure to do so; it is possible to do it without trespassing the code of hospital science so far as I know it. One should be allowed and should take much freedom in such an instance; he would be glad, of course, if the state of the treasury would admit of stone as a material for external walls.

But if you ask what type of architecture appears best suited or most adaptable to beautifying the hospital, I am obliged to answer, a modified Renaissance or some derivative of Classic; that is, so far as detail is concerned. There can scarcely be such a thing as perfectly regular or symmetrical handling of the voids and solids, as is necessary to give the best developed results in Renaissance.

You are obliged to submit to certain irregularities of plans and arrangement of openings, because the wants of the interior are dominant, and interfere with the symmetry required in the perfec-

tion of the Renaissance.

The combination in the same view of the wards,— which are large, with the rooms of the head-house, which are small in plan, but for working reasons must be high in story, adds to the difficulty of designing a building to show the regular and symmetrical beauties of Renaissance work.

The solution of the question as to what is best, can perhaps be nearly reached by recognizing the difficulty fairly, and approaching it in the most direct way.

In a hospital group there are some parts, notably the Administration Building and the Pay Wards, the requirements of which do not suffer by compromise with the demands of external symmetry. These and certain portions of the wards and head-houses may have regularity of design. (It seems unfortunate that the most satisfactory story heights for sick-wards, are not sufficient to permit mezzanines in the head-houses.) For the rest you perforate the walls at such points as you must, and rely on horizontal courses, and

walls at such points as you must, and rely on horizontal courses, and minor details of the cornices and windows for such effects as will make harmony with the richer parts of the design.

It does not seem good judgment to leave the walls of the wards and head-houses so bare and devoid of architectural interest as those of the Johns Hopkins are, especially as they front and are seen from a beautiful park, and every ward is visible from its neighbor. It seems to me that the patients and nurses should have something more interesting to look at than naked walls, which might be, for any external sign that they give, those of a warehouse, and chimneys which might be those of a chemical laboratory. But I must close. I feel that I have only hinted at the thoughts and things which enter into this very interesting sort of building.

and things which enter into this very interesting sort of building. But if I have awakened in some of you the desire to know more of the subject, I have accomplished all that could be expected within the allotted hour.

I will name three books, (I might name ten or twenty; but naming the three, you will have a guide to all the others), in which you

ing the three, you will have a guide to all the others), in which you can find the book knowledge upon which you can start the structure of your equipment for hospital work:—Burdett's "Hospitals and Asylums of the World," "Encyclopedia Brittanica," "The Johns Hopkins Hespital."

The Middle Ages were the Cathedral building centuries. The nineteenth century is the era of railroads and high buildings. The twentieth century, with the growing tendency of the strong to help the weak and unfortunate, coupled with the ability to help them, may prove to be the age of scientific healing, and more them, may prove to be the age of scientific healing, and more universal, enlightened, benevolent and charitable work than has ever before been seen in the world. Along with this will undoubtedly

ever before been seen in the world. Along with this will undoubtedly grow the love of all beautiful things in nature and art.

I can think of no nobler work for you to engage in, those of you who may feel drawn in this direction, than that of preparing to take a part in bringing about this great consummation. If any of you do, I trust it will be with high aims, and with the feeling that this is something better than a railroad building, shall I say better than the Crusades or Cathedral building, or any other demonstration of enthusiastic building, that ever took place for the good of man or the glory of God?

Every work that is done, in the spirit that is now abroad, for the amelioration and relief of human pain, is a step towards the Millen-

amelioration and relief of human pain, is a step towards the Millennium. The hospital, which was once a pest-house and, in a measure, a curse, although founded on the best instinct of humanity, will in the course of the future become without doubt an unmitigated blessing, a veritable Hôtel Dieu, a "house or hostelry of God."



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

FIREPLACE IN HOUSE OF H. L. EINSTRIN, RSQ., 44 WEST 58D ST., NEW YORK, N. Y. MR. MANLY L. CUTTER, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

✓ HOUSE OF FLETCHER S. HINES, ESQ., INDIANAPOLIS, IND. MR. HERBERT W. FOLTZ, ARCHITECT, INDIANAPOLIS, IND.

THE contract price for this house was about \$8,500. story is finished in quartered-oak and the second story in white-wood, painted in white and gold. The house is lighted by electricity, the dynamo being driven by a gas-engine supplied from a private gaswell. Water is supplied by a Rider engine.

ALTERATIONS AND ADDITIONS TO HOUSE OF GEORGE D. SELDEN, ESQ., ERIE, PA. BUFFALO, N. Y. MESSRS. SWAN & FALKNER, ARCHITECTS,

[Additional Illustrations in the International Edition.]

PROPOSED PUBLIC MARKETS AT PATAN, BARODA STATE. F. W. STEVENS, C. I. E., F. R. I. B. A., ARCHITECT, BOMBAY.

WE copy from Indian Engineering an illustration of the proposed Markets to be erected at Patan for His Highness the Gaekwar

of Baroda. These Markets will have an octagonal hall, 60 feet in of Baroda. These Markets will have an octagonal hall, 60 feet in diameter, in the centre, and will have wings running at right angles to each other, each 50 feet in width. This arrangement will afford ample ventilation to all parts of the building, and will enable spacious entrances to be made between the wings to give easy access to the several parts of the building as well as the large entrances at the front of each wing. There will be 148 stalls provided in the Markets, which will be used for the sale of fruit, flowers, vegetables and sundry groods. The stalls will be similar in design to these of the Grants. which will be used for the sale of fruit, flowers, vegetables and sundry goods. The stalls will be similar in design to those of the Crawford Markets at Bombay, but with improvements. Mr. Stevens's principal object in adopting a central octagonal hall with wings at right angles to each other, is to enable the authorities to erect each wing at different times, should the State not be able to complete the building at one time. The spaces between each wing are intended to be laid out with grass-plots, beds and shrubs which will add to the general effect of the building. The style of architecture adopted is a free treatment of Hindu and is well adapted for this building, considering it will be one of the features of a purely Hindu town. The walls will be of local bricks neatly pointed with cement, and the walls will be of local bricks neatly pointed with cement, and the domes, dressings, cornices, mouldings, arches, etc., will be of white Dhrangadra stone. The roof of the central hall will be supported by ornamental wrought-iron brackets supported on cast-iron columns and walls. On the brackets teak purlins will be fixed, carrying the battens and Mangalore tiles. The wing roofs will have wrought-iron battens and Mangalore tiles. The wing roofs will have wrought-iron trusses, supporting teak purlins, battens and Mangalore tiles. The floors will be of concrete covered with stone slabs or Indian Patent stone. The estimated cost of the building is Rs. 150,000. His Highness the Gaekwar has approved of the designs, and, we hope, they will soon be carried out, as the building will not only be an ornament to the town, but will be of great use to the inhabitants—markets being needed for many years past.

VILLA CASTEL, PARISIS, FRANCE. M. FIVAZ, ARCHITECT.

This plate is copied from La Construction Moderne.

LINCOLNSHIRE CRICKET PAVILION. MR. THOMAS MUIRHEAD, ARCHITECT.

This plate is copied from the British Architect.

COMPETITIVE DESIGN FOR DINING-HALL: CHRIST'S HOSPITAL NEW BOARDING-SCHOOL, HORSHAM, SUSSEX, ENG. MR. E. T. COLLCUTT, ARCHITECT.

This plate is copied from the Building News.

FREE PUBLIC LIBRARY, EDINBURGH, SCOTLAND. MR. G. WASH-INGTON BROWNE, ARCHITECT.

DETAIL OF THE ENTRANCE TO THE SAME.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

A QUESTION OF COMMISSION.

New York, N. Y., July 25, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:-

To the Editors of the American Architect:—

Dear Sirs, — Would you kindly oblige me by answering the questions as stated below, or by sending me a copy of your paper in which the questions are answered or the subject discussed? An architect prepares plans ($\frac{1}{4}$ " scale) and specifications for a building; the estimates obtained are above proposed cost and the project is given up. The architect receives his fee of $2\frac{1}{2}\frac{9}{6}$ on proposed cost of building — for general drawings, and specifications, and sketches. He learns that his design is being used. How will his claim, that the payment of his fee of $2\frac{1}{2}\frac{9}{6}$ on proposed cost of building does not entitle his client to the design, stand before the law, and also, has an payment of his fee of 23% on proposed cost of building does not entitle his client to the design, stand before the law, and also, has an architect the right to use a design for which he has received a fee of 2½% for another building? These questions seem to elicit so many differences of opinion among architects that I should like to know the law on the subject. MANHATTAN.

The first question is entirely a jury matter. The law appears to be such that, if a person engages an architect, without saying anything about limiting his service, he is presumed to have engaged him for complete service in regard to the building contemplated, and has no right to terminate his employment without reason. The fact that the architect's plans cannot be carried out within the limit of cost described to him, or, at least, within a reasonable approximation to that limit, is, however, in law a sufficient cause for discharging the architect. The points which would be submitted to the jury, and on which the result of the controversy must obviously depend, would be: (1) Was there any express or implied stipulation, in the engagement of the architect, that his service might be terminated at the owner's pleasure? (2) Was it found impracticable to carry out the architect's plans within the limit of cost to which he was instructed to

conform, or within what the judge would rule to be a sufficient approximation? (3) Did the architect, either expressly or by implication, agree or consent to receive the two and one-half per cent fee in full satisfaction of all claims? If the jury answers any of these questions in the affirmative, the architect can recover nothing more. If, however, the jury finds a negative answer to all of them, a fourth question would come up, namely: Has the owner waived the circumstance on which he based his discharge of the architect, by going on and carrying out the plans, notwithstanding the fact that it will cost more to do so than he intended? This would be for the judge to answer, and, if he considered that such a waiver was implied, the architect, provided always that he had never consented to the termination of his engagement, or accepted his two and one-half per cent in full of all demands, could probably recover damages, in addition to what he had received, to the extent of two and one-half per cent more, less what the jury concluded, from the testimony of expert witnesses, would be his actual outlay for completing the service he was engaged for. If the architect's complaint alleged frand on the purt of his client, and the jury found that the latter had only pretended to be dissatisfied with the excessive cost of executing the plans, in order to settle with the architect at a discount, really intending all the time to go on with the building, even a receipt in full from the architect, thus fraudulently obtained, would probably be set aside by the court, and his claim for damages admitted. It is obvious, however, that the answers to all these questions would, in any particular case, depend on evidence as to conversations, personal relations, and so on, so that it would be almost impossible to predict the result. If the question referred to an actual occurrence, we should make the comment that, if an architect makes plans which cost more to carry out than a reasonable approximation to the limit of cost, which was a conform, or within what the judge would rule to be a sufficient approximation? (3) Did the architect, either expressly or by implication, agree or

WANTED: RADIATORS.

BOSTON, MASS., August 10, 1894.

To the Editors of the American Architect:

Dear Sirs, - Some months ago, I tried, through the columns of our paper, to find the address of the manufacturer of a certain type of direct indirect radiator, of which I had formed a favorable opinion from a circular which I had happened to glance over on its way to the waste basket. None of your readers seemed to be able to furnish the information wanted, and the building for which I made the inquiry was fitted-up with something else. Some months later, the manufacturer himself called upon me, and, on my expressing my disappointment at not having been able to get his radiators for this previous occasion, said that he was so busy that he would not have been able to furnish them anyway. Now, I want more radiators of previous occasion, said that he was so busy that he would not have been able to furnish them anyway. Now, I want more radiators of the same sort, for another large building, but am as much in the dark as ever as to where to apply for them. If this modest manufacturer is in a position to furnish them, and will make his address known to me; or if anyone who knows of any manufacturer of such goods will put me on the track of them, in time to call for them in the specifications now under way, I shall be very much obliged. Very truly yours, INQUIRER.



Boston, Mass. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts. New York, N. Y.— Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.



LAYARD'S DEEDS AND CHARACTER.—"Sir Henry Layard," remarks the London Saturday Review, "might be quoted as an example of the truth of Gordon's saying that England has been made by her adventurers. Using the word in the honorable, old sense, and not with the ugly, invidious meaning which has come to attach to it, he was an adventurer—that is to say, a man who picked out a piece of work to be done of his own motion, and by his own efforts, with means which he either supplied himself or obtained by personal influence over others. It is true that he had a Parliamentary and a diplomatic career, but he would have had neither if he had not first earned distinction by his own efforts as an explorer. Something of the adventurous disposition remained with him throughout. It prompted him to witness the battle of the Alma from the maintop of the Agamemnon, and was perhaps not without its influence on him during his tenure of the

Embassy at Constantinople. Sir H. Layard will, however, not be remembered either because he was for a few years a member of the House of Commons, or because of his services as Ambassador at Constantinople at a time of crisis. Between the incorrigible faction of Mr. Gladstone and the equally incorrigible corrupt folly of the Pashas, which he may not have estimated at their true, stupid worthlessness, and could in no case control, the policy he endeavored to help Lord Beaconsfield to carry out had no chance of success. In the earlier part of his life, Sir Henry Layard had fortunately had opportunities of doing work which neither English office-seekers nor Turkish Pashas could spoil. We have observed, with what it is polite to call surprise, that the leading Gladstonian paper is of opinion that the honorary degree conferred on Sir H. Layard in 1848, by the University of Oxford, was given for some mysterious reason. It may appear mysterious to the curiously-constituted Gladstonian mind that the University did not foresee that Sir Henry would fall out with Mr. Gladstone thirty years later, or even did not consider the possibility of such an event as supplying a sufficient reason for declining to confer a well-merited honor. To most people it will seem self-evident that the honorary degree of 1848 was very rightly given for the voluntary services to learning of 1845. At that period the exploration of the sources of the history of the East was a comparatively new, and very important, branch of scholarship. In the one very interesting and valuable part of it, England would not have taken any adequate part but for the volunteer enterprise of Layard. The Manchester School, and the prevalence of the feeling which dictated the well-known explosion, 'Damm the Fine Arts!' would have combined to prevent the English Government from giving the help which was freely rendered to French scholars by their own country. During a visit to Mosul, Layard had seen that exploration of the mound of Nimrod, already begun by M. Botta, would

Chicago's "Cliff-dwellers." — Eighty-nine North-shore cliff-dwellers were arrested in their romantic houses along the dump at fluron Street the other night. When the World's Fair closed last October, a great mass of human driftwood, gathered from all climes, was thrown upon the city. Hundreds of men who had sold red-hots, "yer ofishul guide," and stained eye-glasses along Stony Island Avenue found themselves without employment and no means to return to their former homes. During the winter, the corridors of the city-hall, soup-kitchens, and police-stations sheltered them. When the rigor of winter was over, some of them left the city and some secured employment. Nearly two hundred of them did neither. They drifted to the north shore and built for themselves habitations. The lake at this point was being filled and there was no end to the variety or quantity of material they had at hand for building purposes. The lake itself was not unkind to them, and wreckage, sawed lumber, and St. Joe fruit-crates and chicken-coops were now and then washed ashore at their feet. These made the framework of the dwellings in the cliffs. The bank or cliff is in some places thirty feet high, receding from the shore in convenient terraces. In constructing a cliff-home, an excavation would be made in the cliff about ten feet square. A frame would be put in with especial care to have the roof water-proof. Worn-out felt roofing, strips of sheet-iron and tin would be spread on the roof-frame and a thick layer of soil placed over all. The cliff-house was then finished, excepting decorations. Old carpets, wall-paper, picture-frames, and matting discarded from more pretentious dwellings farther north on the shore filled this want. The house proper was only used for sleeping purposes. The cooking was done out in front in tomato cans. Two men generally lived together. A feeling of comradeship had sprung up in the settlement; there was little quarrelling, and a few of the most thickly populated terraces had even been dignified with names of st

ROMAN DISCOVERIES IN ALGERIA. — Fresh discoveries have just been made in Algeria, in the old Roman city of Thamugadis, now Timgad. In excavating the capitol, many important fragments of a colossal statue, at least twenty-eight feet high, have been found. Traces of painting have been discovered on three other statues recently unearthed. — N. Y. Evening Post.

EXHAUSTION OF THE WHITE-PINE SUPPLY.—The Northwestern Lumberman, which a few years ago took the ground that the supply of white pine in the northwestern States was inexhaustible, now shows by what it believes to be authentic figures that the shortage in one district alone for the current year will be 700,000,000 feet, and information points to general shortage in all the northwestern pine territory.

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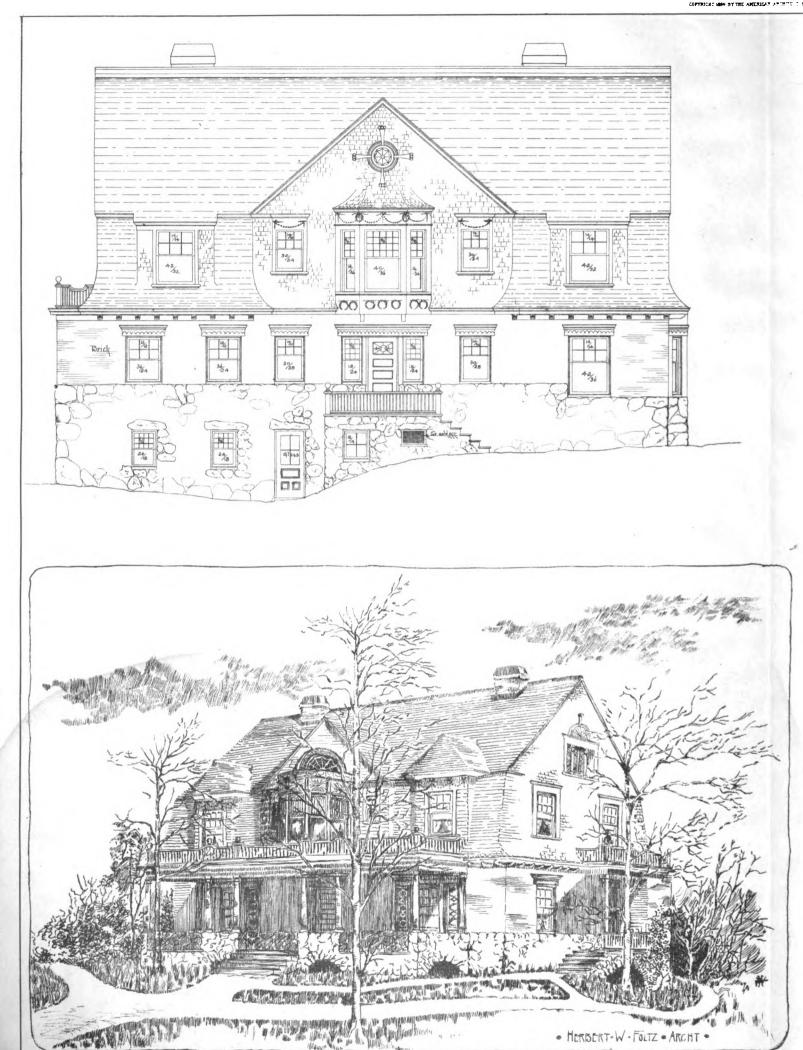
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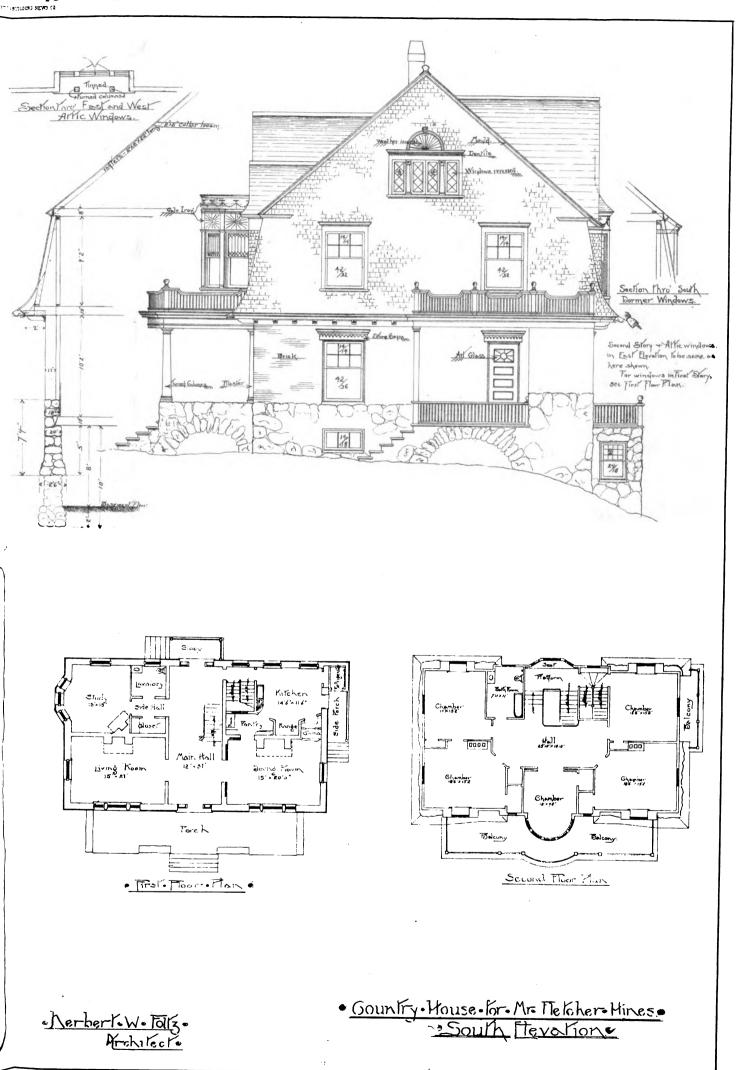
FIREPLACE IN HOUSE OF H. L. EINSTEIN, ESQ., 44 WEST FIFTY-THIRD STREET, NEW YORK, N. Y.

MANLY N. CUTTER, Architect.

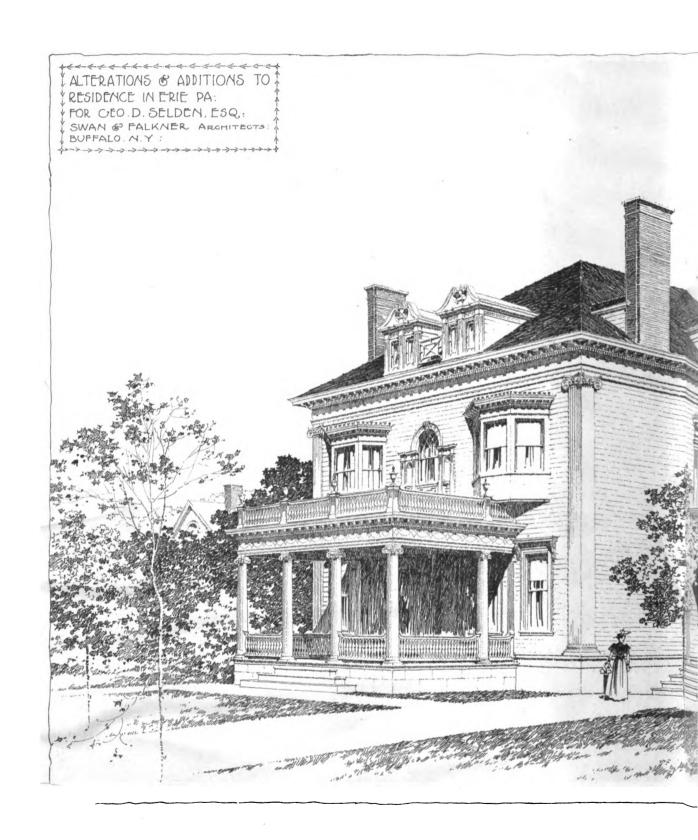
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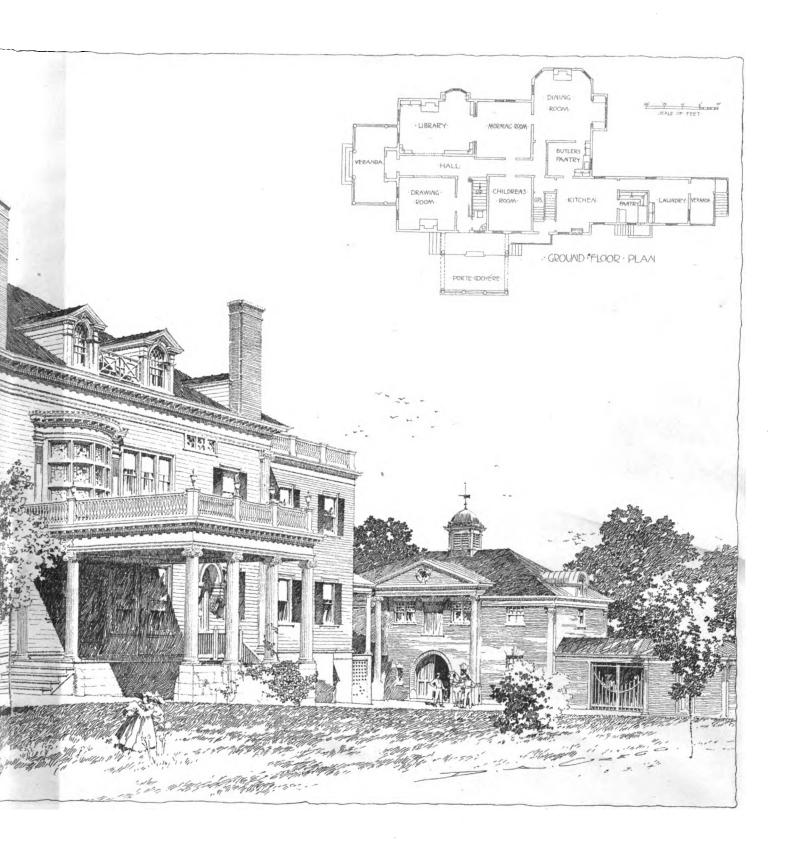
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AUGUST 25, 1894.



Prof. T. H. Norton on the "Battle with Fire."—Carbonic Acid Gas as a Fire-extinguisher.—Death of S. D. Hatch, Architect.—Mr. Olmsted protests against the Destruction of the Palisades.—The Hygiene of the Staircase.—Treads and Risers.—The Recent Protestant Church Building Congress at Berlin.—The Proper Place for the Pulpit.—A Royal Egyptian Tomb.—Death of M. Edmond Guillaume, Architect.—The late Arthur Rotch's Bequests in Aid of Architecture.

BOOKS AND PAPERS.

ILLUSTRATIONS:—
House of Elbridge T. Gerry, Esq., Fifth Ave., New York, N. Y.
— House at Elizabeth, N. J.—The Abbot's Barn, Glaston-bury, Eng.—The Abbot's Kitchen, Glastonbury, Eng.—
House at Ottawa, Canada.—Accepted Design for the High School-house, Malden, Mass.

Additional: Interior of Banquet-hall, New York State Building, World's Columbian Exhibition, Chicago, Ill.—Sketches and Details at Ragusa, Italy.—Interior of the Abbot's Barn, Glastonbury, Eng.—Door of the Same.—The Tithe Barn, Doulting, Somersetshire, Eng.—The Bishop's Barn, Wells, Eng.—Shireoak, Headingley, Eng.—The Old Gardens, Headingley, Eng.—The Old Gardens, Headingley, Eng.—76

Communication: —
A Correction. . . .

The recent meeting of the American Association for the Advancement of Science, a paper was read by Prof. Thomas H. Norton, of Cincinnati, on "The Battle with Fire," in which he treated the great problem of lessening the annual destruction of American property through conflagrations from a rather new standpoint. Professor Norton, being a chemist, naturally recurred to chemistry for means for resisting fire, and his suggestions seem to be valuable, although, as we think, the reservation ought always to be made, in discussing new plans for preventing or putting out fires, that no chemical treatment can take the place of the good old system that the Romans taught, — the making of buildings out of materials that will not burn. Professor Norton called attention to the valuable properties of the silicates, of hydrate of alumina, and of borate of magnesia as applications for rendering woodwork uninflammable, and observed, very sensibly, that if such applications cannot make wood fireproof, they, at least, delay its burning, and every minute that can thus be saved, while the engines are coming up, is precious. As to the alkaline silicates, our own experience with them does not encourage the belief that they will ever be used extensively for protecting interior woodwork. Their disposition, a few months after application, to effloresce, and throw off paint or varnish put over them, is too strong to suit architects, who must think of other things in addition to protection against fire; and equally good results in diminishing inflammability can be obtained by the application of certain kinds of paint. Professor Norton's suggestion, that such paints might with advantage contain hydrated alumina, should be kept in mind. Judging from the excellent quality of the lakes, which are made with precipitated alumina, the addition of this substance should have no injurious effect on the color of the paint, and if some medium less combustible than linseed oil could be found as a vehicle, such paint might serve an important purpose.

PROFESSOR NORTON makes two other suggestions, the value of which is not quite so clear. Speaking of the increasing production of aluminium, he says that it will probably "effect an important revolution in the use of structural materials." If this means that aluminium is likely to take the place of iron and steel, which are the only metals that can fairly be called "structural materials" at present, there are few persons now living, we imagine, who will see that "revolution" accomplished; and, so far as fire-protection is concerned, nothing would be gained by it. On the contrary, aluminium is

a metal rather easily combustible. Already, aluminium foil and powder are extensively used, in place of magnesium, for producing flash-lights for photography, and if it is true, as is claimed, that the zinc-roofing common abroad spreads conflagrations by catching fire and blazing up, aluminium metal-work would probably be little better. The other suggestion, that carbonic acid should be used instead of water for pith recovery fires, is not new, and can be commended only with reserve. The objection to it has always been that fires could not be put out by means of it without suffocating everybody in the burning building, and this would hardly compensate the undoubted advantage that the gas treatment has over water, of being harmless to goods stored in the building. Professor Norton suggests that carbonic acid should be laid on to buildings by a system of pipes, just as water now is, in such a way that the gas could be poured, either automatically or by hand, into any room in which a fire appeared. If people could breathe carbonic acid, or if it did not mix with air, this would be all very well; but the idea of having a factory-room, crowded with operatives, flooded with carbonic-acid gas from automatic sprinklers, through, perhaps, the burning of a basketful of waste, is by no means pleasant to contemplate; nor would the manipulation, by an unskilled watchman, of a three-inch hose, discharging a suffocating gas under pressure, be very safe, either for the watchman or the people in the neighborhood of

R. STEPHEN D. HATCH, a vell-known New York architect, died suddenly last week in Plainfield, N. J., where he was spending the summer. Mr. Hatch was born at Swanton, Vermont, February 16, 1839, but had spent nearly all his life in New York, where, for many years he was very prominent in the profession. The Boreel Building, on Broadway, and the Murray Hill Hotel are, perhaps, his most important works, but he designed a large number of costly mercantile and other structures.

R. FREDERICK LAW OLMSTED calls attention to the destruction which is being wrought upon the Palithe destruction which is being wrought upon the Palsades, the beautiful range of vertical cliffs which lines the Hudson River opposite New York. The Palisades, as every one knows, form the face of a trap dyke, and, unfortunately, trap-rock forms excellent paving-stones. The consequence is that the precipices, which, twenty years ago, were haunted only by the eagles which built their nests in the inaccessible state are not dilled and bleeted in every direction and the clefts, are now drilled and blasted in every direction, and the beautiful beach which once lined their base resounds with the ring of pene-hammers and the roar of explosives. Already, the appearance of the cliffs, even as seen from the New York shore, a mile away, is materially altered; and Mr. Olmsted gives warning that unless the blasting is stopped at once, the famous Palisades will soon be a thing of the past. The New York Tribune has taken up the matter, and urges that the western shore of the river should be taken by the State of New Jersey, to which it belongs, as a public park. This would be an excellent thing, and we earnestly hope that the proposition may be carried out.

HE German Public Health Monthly gives a report of a lecture on the "Hygiene of Stairs," which was delivered by Dr. von Kerschensteiner, of Munich, before a recent Convention of German Physicians, and contains a good deal of useful observation. We are so accustomed to planning stairs in the way in which we have always seen them planned that it is rather startling to have a physician call attention to the unquestioned fact that the staircase, which is, almost, the most frequented part of the house, is nearly always dark, unventilated. dirty and dangerous, in a most unnecessary and reprehensible degree. Old people and children are constantly meeting with serious injury from falls on staircases, which might be avoided with a little care; while an immense amount of unnecessary suffering is inflicted upon young, sickly and infirm persons through the same want of thought in planning the stairs which they are compelled to use. As to lighting and ventilation, it is obvious that a dimly lighted stairway is a source of constant danger, and, as Dr. von Kerschensteiner says, ought to be made the subject of police attention; but every one does not realize that a well-ventilated hall and staircase add immensely to the freshness of the air in the rooms communicating with them; while a close, unventilated stairway makes itself known in all parts of the house.

'N regard to the details of staircase design, Dr. von Kerschen-N regard to the details of staircase design, Dr. von Kerschensteiner says that no step should ever be more than six inches high, or less than eleven inches wide. Greater steepness than this makes the stairs not only dangerous to children, but so fatiguing for persons with heart or lung affections, or too old or too young to be in full command of their muscles, that serious results may follow from their constant use. Even with easy stairs, he says that no flight of more than twenty steps should ever be planned without a landing, and the landings should be furnished with permanent seats. Moreover, the staircase hall should always be warmed in winter, and the steps and landings, if of stone, covered with linoleum, or some other washable carpet. He, however, prefers wooden stairs to those of stone or iron, and says that, if the building-laws would only permit their construction, they would be found nearly as fireproof as stone; an idea in which he will hardly be supported by the building professions. Every corner, adapted for catching dust, should be avoided in or about staircases, and even the walls should, he thinks, be painted, as smoothly as possible, so as to allow frequent and effectual washing.

THE Protestant Church-Building Congress at Berlin, besides the interchange of views, which is always the principal advantage to be gained from such conferences, accomplished a certain advance in the development of its subject, by the appointment of a committee, consisting of six clergymen and the officers of the Society of Berlin Architects, to consider further the questions proposed to the Congress, and report at a subsequent Congress, which is to be held at some period not yet determined. As might have been expected, the discussions in the Congress itself were sometimes a little acrimonious, without resulting, probably, in the change of anybody's convictions. People who talk for the first time with other people on such subjects are apt to be too much shocked at the idea of any one's differing with them to be able to consider calmly the merits of the opposing theories; but it is something to have got over this preliminary difficulty, and a second Congress will be more disposed to consider dispassionately the views presented by the committee.

ATER accounts give some interesting details of the discussions. It is not surprising to hear that the conference developed radical differences of opinion among the members of the Congress, and differences of opinion on subjects even so remotely connected with religion as the position of church pulpits and organs are, as we all know, not easily reconciled. As architects who have had much church-building to do can readily believe, the most startling opinions in regard to church planning were propounded by ecclesiastics. One of these, during the discussion as to the proper relative position of the altar, the font and the pulpit, coolly observed that he considered, for a small church, a pulpit and font as equally useless. In his judgment, a communion-table, which would answer for baptisms, with room in front of it for the preacher to stand, was furniture enough. Most architects can imagine the subdued horror of the High-Church section of the Congress at this deliverance. but it was kept within due bounds; and, as the editor of the Deutsche Bauzeitung very sensibly says, both parties were, after all, better off for having listened patiently to each others' ideas.

IMONG the less radical members, the discussion was devoted more to an exchange of views as to whether the altar should be at the end of the church, or brought forward; and whether the pulpit should be in front of it, or at one side, so as not to hide it from the congregation. Probably this question, which resolves itself into the subjective one of whether the person answering it receives religious impressions best through the intellect or the affections, will never be settled; but some valuable suggestions were made in the course of the discussion. One member remarked, very truly, that the placing of the altar at the end of the church, giving it a chancel to itself, was practically advantageous, in making a larger space for communicants, and for the participants in confirmation and marriage sacraments; and another answered, no less truly, that an altar at the end of a Protestant church always looks dark, and he preferred to see it brought forward

into a better light. This observation is certainly an important one. If there is a large east window, an altar under it, in an ordinary Protestant church, is almost invisible, and the contrast between this gloomy object and the soft sparkle of a Catholic altar is by no means satisfactory. Probably a Protestant, especially a Lutheran, would prefer even a dim daylight on an altar to any artificial illumination, but it is not at all beyond the power of architects to arrange an altar at the end of a chancel in such a way as to concentrate a bright daylight upon it, and, to our mind, the experiment would be well worth trying, for the sake of giving more unity and expression to the interior effect than is often seen in Protestant churches.

IN interesting tomb was recently opened in Egypt, by M. de Morgan. A group of pits, surrounding a royal tomb, was first examined, and one situated close to the royal tomb was cleared of its contents. After it was excavated, a door was found at the bottom, opening into a gallery. portion of the gallery nearest the entrance seemed to form a sort of vestibule, and in this were found vases of clay, with traces of mud deposited from the Nile water with which they had once been filled; and dishes, some containing pieces of embalmed meat, and others the dried remnants of cakes and similar eatables. In a corner were two boxes, one containing a number of alabaster vases of perfumes, carefully labelled, while the other was filled with arrows, reeds, what seemed to be sceptres, and a mirror. Beyond was the sarcophagus, containing the body of the deceased to whom these presents had been offered. On opening this, the usual wooden mummy-case appeared, covered with plates of gold, with an inscription, also in gold, giving the name of the defunct — Princess Noub-Hotep-ta-Khroudil. The mummy itself had been injured by dampness, and nothing remained in the case but a mass of dust, bones and jewels. On the head was a coronet of silver and precious stones, with the sacred serpents, and a vulture's head in gold. Around the neck was a necklace, with fifty pendants, all of gold, terminated by two hawk's heads, of the natural size, in gold. By the side was a dagger, with a gold blade, and on the wrists and ankles were bracelets of gold, set with emeralds, pearls and carnelians.

Guillaume, one of the most distinguished of the older French architects, who was, perhaps, better known here by his books, and by the professorship that he had long held in the School of Fine Arts, than by his buildings, although he had executed many important works. M. Guillaume was, above all, a scholar and man of learning. After taking the Grand Prize, in 1856, he was sent to Asia Minor, and carried on a series of investigations, the results of which he published in his book, "Explorations Architecturales dans la Galatis et la Bithynie"; and this was followed later, by his well-known "History of Ornament." During the last years of the Empire, he was made Inspector of the Palaces of St. Cloud and Malmaison, in recognition of his increasing reputation; and, later, was appointed architect to the Palaces of Versailles and Trianon, the Louvre and the Tuileries, and the Archives Nationales. In 1884 he was made Professor of the Theory of Architecture at the School of Fine-Arts. Among his executed works, the most important are the Hôtel-de-Ville at Cambrai, the Commemoration monument at Lima, Peru, and some very fine private residences in Paris and elsewhere.

BY the will of the late Mr. Arthur Rotch, a large sum has been given to the promotion of the study of architecture, for which he has already done so much. To the Massachusetts Institute of Technology he bequeathed, in all, forty thousand dollars, certain portions of the gift being reserved as funds to maintain annual prizes, both for regular and special students, in the Architectural Department; and in addition to this, he bequeathed to the Department all his books and photographs relating to architecture, except those in his business office. To Harvard University he left twenty-five thousand dollars, the income of which is to be applied toward the maintenance of the new Architectural Department; and, to the Boston Architectural Club, five thousand dollars, to be expended upon books and photographs for its library. This thoughtful gift, particularly, will be highly appreciated by the young architects and students of Boston, to whom a good working library will be of the greatest service.

THEATRES.1 - V. THE PARAGON THEATRE.



N the American Architect for June 11, I illustrated the Royal Alhambra Theatre, Leicester Square, London, the noted Theatre, Leicester Square, London, the noted Theatre of Varieties of the West End or fashionable part of this great metropolis. The subject of the present chapter, the Paragon Theatre, situated in the Mile End Road, Whitechapel, is an example of the luxury and convenience afforded the pleasure-seekers of the East End or poor quarters of this city. convenience afforded the pleasure-seekers of the East End, or poor quarters of this city. London west of the Law Courts, and London East of Bishop'sgate, to the stranger in the land and to those unfamiliar with this metropolis, are like two vast and distinct towns in different parts of the world, scarcely seeming as if but a mile of "City" divided them. The character, dress, and even accent of the East Enders are characteristic and unique; the coster and his girl have been the subject of so many sketches and illustrations that, doubtless, their peculiarities are familiar even to the readers of this professional journal.

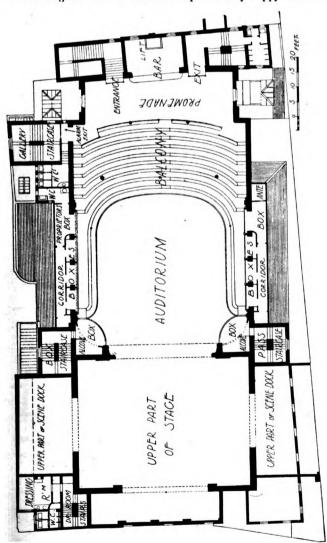
iar even to the readers of this professional journal.

Now, the Paragon Theatre had an origin in an East End musichall, which, by the skill of the architect, to whom I am indebted for hall, which, by the skill of the architect, to whom I am indebted for the drawings I now am about to describe, was transformed into the large and commodious theatre which graces this end of the town. In designing this house, Mr. Frank Matcham, the architect, has displayed his keen knowledge of the requirements peculiar to the case. First, he has given a large and open floor for the occupants of the area, or pit and stalls seats, and surrounded these divisions of his audience by raised propognedes on three sides the fourth being his audience by raised promenades on three sides, the fourth being occupied by a stage of such a size as to be capable of mounting any spectacular play or ballet.

Reference to the section will show that the auditorium is open and airy, and that although there are large balcony and gallery tiers above the pit, yet the ground-floor seats are not buried under the project-

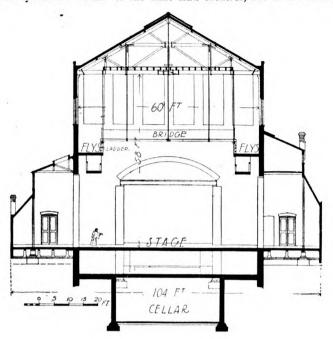
ing tiers.

This arrangement of the audience is particularly happy when it is

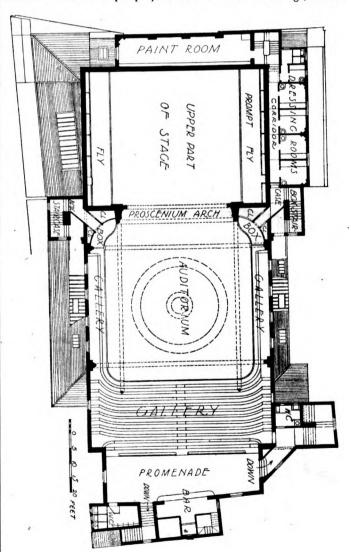


considered what are the peculiarities of the frequenters of the East End places of entertainment, and what is the class of "show" they

require. It is true that the inhabitants of Whitechapel, Mile End and Bow appreciate the blood-and-thunder of the melodrama which usually fills the "bills" of the East End theatres, but at the Para-



gon it was determined to vary the class of entertainment and to provide, as in the West End of London, the now popular variety-show in a house of ample proportions and luxurious fittings, consid-

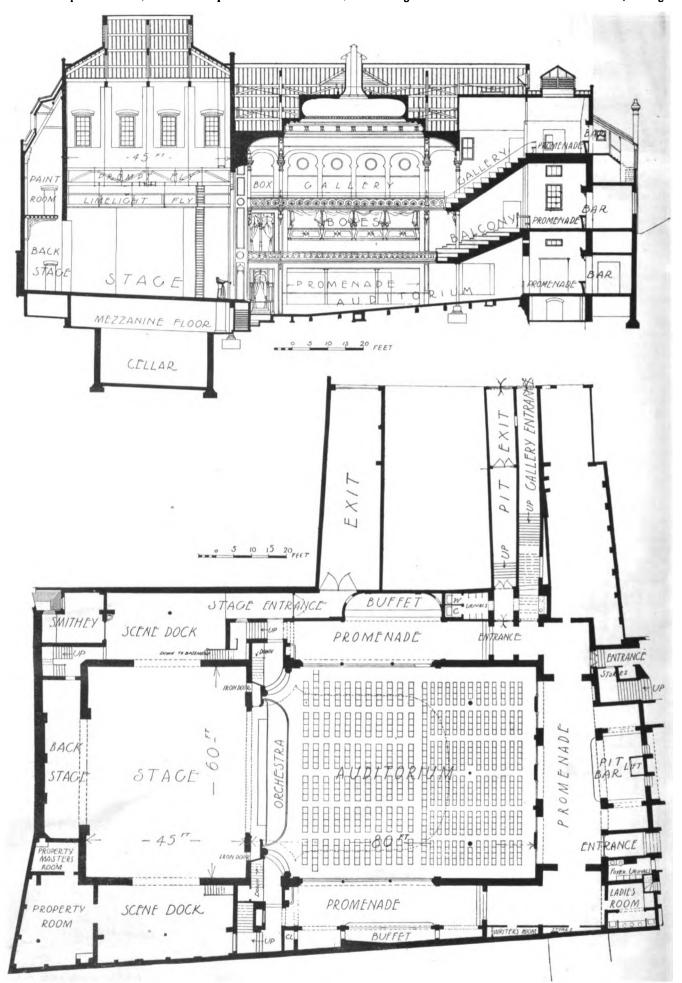


ering the neighborhood, and the low price which such a neighborhood can pay for the seats. A theatre, therefore, with plenty of room to roam about in at will, between the "turns" and items of the programme, with comfortable stuffed arm-chairs to sit in and

¹Continued from No. 970, page 37.

enjoy the evening pipe has been given — thanks to Mr. Matcham's skill — to the poorer London, a theatre of equal merit to those which

The decoration of the hall is particularly happy, the monotonous cream-and-gold treatment of which one tires to death, with gilded



provide similar entertainment in the fashionable quarters of the gingerbread appearance so familiar in theatres, so soon to tarnish town.

The raised fibrous-plasterwork is carried out with a somewhat Eastern feeling in the design, and very pleasing tones of coloring are produced throughout the auditorium and its fittings in harmonies of

green and terra-cotta.

One word about the sighting lines of this house. I would draw special attention to the form of the curve of the two gallery fronts: here the architect has overcome the difficult problem of placing the majority of his audience facing the stage so that they may see the performance in comfort without having to twist their heads round to obtain but an imperfect view of that on which they have paid to look. There is not a seat in this theatre from whence one cannot see the whole performance with ease; many more pretentious theatres are unable to boast of this luxury, and yet surely it should be one of the first objects of the architect to give his clients a house, where any one seat will sell as readily as any other; where no grumbling can be heard from the public, or dissatisfaction at having paid their be heard from the public, or dissatisfaction at having paid their money for what they are not able to obtain. Managers who have bad seats to fill, and take money from the public for them, are blamed by the public, and almost looked upon as obtaining money under false pretences, but the managers, after all, are only partly to blame; it is the designer of the building who has placed his seats where the occupants cannot see the performance in comfort, not the manager. If it is dishonest to sell short weight, short measure, or goods of an inferior quality to that which they are declared to have goods of an inferior quality to that which they are declared to have— it is surely as reprehensible to sell tickets for a show which the buyer can only see part of.

This reminds me of what I once heard about a well-known London actor, as well known in America as in England; when travelling with his company in the provinces, he used to examine the box, or seat plan of the theatre where he was going to play, and strike out the seats where he knew the performance could not be properly seen, and forbid the box-keeper to sell those tickets. This is an example one can scarcely hope many to follow, as when money can be obtained

from the public the temptation is too great to refuse it.

But what harm bad seats do a house! A man goes to a theatre, he has not a good location, he does not enjoy himself, his efforts to obtain a view of the stage stiffens his limbs, his neck is strained, his back aches, and he comes away in a bad temper; the consequence is that he tells all his friends not to go to that play, he did not

enjoy it and he is sure they will not.

So I come back to the architect and his duties towards public and client. Old conventional forms and lines of gallery-fronts should not always be followed: the elongated horseshoe of the opera-house, where tier upon tier of private boxes fill the auditorium, in which the occupants can move their chairs to the front of the box to see the play or to be seen themselves as they may prefer, is not the sight line for the open gallery and balcony required in the house devoted to the drama or the theatre of variety. In the line given in the Paragon, Mr. Matcham has been ever mindful of this, and arranged

his seats as shown on the accompanying plan, facing the stage.

Where there are long rows of seats in stalls or pit, it is very often difficult, when one is on one side of the house and wishes to pass to the other, to perform this exploit without disturbing a large number of the audience and receiving abuse, silent or otherwise, from the people by whom one has to thrust one's self. This has been foreseen by Mr. Matcham, and he has provided a subway under the orchestra from one side of his stalls to the other, so that any one wishing to cross over to the other side of the theatre can do so without being a public annoyance. It is observance of these minor details that distinguish between the success or failure of a modern theatre.

As an example of designing a plan to meet special requirements

As an example of designing a plan to meet special requirements for the class of entertainment, and of the neighborhood in which the theatre is situated, I commend my readers to the study of the plans of the Paragon Theatre, Mile End, London.

In concluding the article, I give some of the leading dimensions

of the building

-		
Curtain line back wall of pit	81	feet.
Width between main walls of pit	60	
Width between main walls of building	100	"
Width of proscenium opening		
Curtain line to back wall of stage	57	"
Width of stage	60	66
Curtain line to balcony front	57	**
Curtain line to gallery front	60	
Height of proscenium opening	31	44
Height from stage to griding	61	66

E. A. E. Woodrow.

[To be continued.]

THE ABBOT'S BARN, GLASTONBURY, ENGLAND.

IIIE rambler among the Mendips, as he climbs their gently-swelling heights, turns to look out over the roofs and grey towers of the ancient cathedral city of Wells nestling below at towers of the ancient cathedral city of Wells nestling below at the foot of the range and across the green fields southward to where there rises against the sky the bald cone of a hill sweeping steeply up from the plain and bearing upon its narrow summit the lonely ruin of a tower. It is the Tor of Glastonbury, the crown of that fabled Arthurian "Isle of Avalon," over the fertile meadows at whose base once rolled the salt waves of the yellow sea.

For many centuries, in the ancient chronicles of England's great through the rude ages before the Conquest and far away in the

past, through the rude ages before the Conquest and far away in the dim days of fable has the old Tor been known of men. Great and

lowly, old and young, pilgrims from many lands have toiled up the steep grassy slopes to the shrine, long since dismantled, yet lifting its sturdy old gray walls aloft upon the top.

Glastonbury was the site of one of the earliest Christian establishments in all England, and her name looms out of the mists which enfold the legendary days of Briton and Saxon. Mr. Freeman writes of a church there, of wattles and timber, built by the Britons, which survived the Conquest; of a monastery church founded by King Ina in the eighth; and of a stone church by the great Duncton in the tenth continue. stan in the tenth century.

Glastonbury waxed rich in the days of Dunstan, who was a mighty

maker of kings, and indeed the virtual ruler of England in his time. It was there that Dunstan was born and bred and it was in his little cell at the abbey, built, for penitential purposes, too short for him to lie down at full length, that he worked at his forge and became a noted smith. There also he gained great fame, and indeed laid the lie down at full length, that he worked at his forge and became a noted smith. There also he gained great fame, and indeed laid the foundation of his subsequent power among the people, by a remarkable event which gave at once most certain proof of his saintliness and personal prowess. The devil, so the story runs, having one day stopped at Dunstan's little window, possibly incog., dropped in the course of conversation a very glowing hint or two of the delights of the world and the flesh; whereupon the monk, who was at the time angaged in fashioning a bit of ironwork pulled his pincage out of the the world and the flesh; whereupon the monk, who was at the time engaged in fashioning a bit of ironwork, pulled his pincers out of the fire and with them nipped the nose of the insinuating fiend, and held on until his bellowing had aroused the monastery. From that day Dunstan was destined to eminence. His advancement to high position was rapid. He was a man of force, and they admired men of force in those rude old days. A renowned polemic, he generally had his own way in the councils of the Church, as he did in those of the State. Where his schemes were thwarted and his arguments failed to convince, he resorted to drastic measures. For instance, it was by means more forcible perhaps than pious, that he carried the day in the conference which determined the celibacy of priests, for when he had closed the protested delayed by health a protested delayed by health as forcing the mediance. he had closed the protracted debate by boldly referring the whole contested question to "Christ Himself as Judge," the floor of that side of the room where he had seated the obstinate opponents of his

own views suddenly fell in and silenced them forever.

It occurs to one who reads these events in Dunstan's life, that the devil, who really gave him a start, as has been told, must have watched his career with interest.

In the days of his greatness, Dunstan did much for his Abbey of Glastonbury in endowments of lands and revenues, and when he died the market heattered themselves to have him as particular themselves to have him as provided and revenues. died the monks bestirred themselves to have him canonized, and so Dunstan became a saint. The might of the old scheming abbot lived after him in his very bones, which, treasured in the sanctuary of the Abbey Church of St. Joseph of Arimathea, where also slept St. Patrick, it was said, and even the legendary bones of the great King Arthur himself, and of Guinevere, his Queen, shortly became of miraculous repute among the faithful and were for many years one

of the abbey's greatest sources of wealth.

After Dunstan, many another learned churchman gave Glastonbury to the service of England, and so with always one or more of her sons in high places, the abbey was great and glorious through the long years, until, upon a day, ruin came upon her and she was

Upon the brow of the old Tor on that evil day was cruelly spilled Upon the brow of the old Tor on that evil day was cruelly spilled the blood of a good old man, the last of Glastonbury's hundred abbots, when on the morning of the fifteenth of November, 1539, Abbot Richard Whiting was hanged, drawn and quartered on that sacred ground. He died for his duty, rather than betray his trust, and of the many thousand victims of the axe, the gibbet and the quartering-block, who fell in the reign of Henry the Eighth, perhaps none better deserved the crown of martyrdom. Mr. Froude tells the story and Mr. Crake in his "Last Abbot of Glastonbury" has woven the events of the abbot's last days into a readable romance. When the royal emissaries swooped down upon historic Glastonbury and took possession of the abbey with its churches, houses and lands in the King's name, the old abbot, who had been watching events and awaiting the blow, was found to have concealed the plate events and awaiting the blow, was found to have concealed the plate and most precious treasures of the church, thus despoiling the monarch of ever bluff memory of the most coveted bit of the royal plunder. Thomas Cromwell and the King, who had expected to find Glastonbury a very fat quarry, were naturally much incensed. They had the abbot seized at once, charged him with robbing his church of the sacred vessels, and also with high treason and conspiracy, and, as nothing would frighten him into giving up the secret of the van-ished treasure, they caused him to be tried on these charges at Wells, on the fourteenth of November, 1539. "A most worshipped box of jurymen" promptly and loyally condemned him to death. The prior and sub-prior, who knew nothing about it and could not have told even if they would, were to die with him. He was taken He was taken from the court-room to Glastonbury in his own horse-litter, and passed his last night with his two fellow-sufferers in earnest prayer. passed his last night with his two fellow-surferers in earnest prayer. They were closely guarded in the strong room over the great gate of the abbey, and their only request, to be allowed to take farewell of their brethren, was denied. In the early morning the old man was led below to the yard, where they bound him to a hurdle, upon which he was dragged at the horse's tail through the streets between the ranks of his sorrowing people, who looked helplessly on at the indignities done their beloved pastor and ever-generous friend. Up the grassy slopes of the old Tor they dragged him, and there he met his death very patiently under the sky.



Thomas Cromwell, the counsellor and abbetor of the King in these persecutions, originated, or at least, matured and carried out the seizure of the monasteries and the plunder of their great properties. Abbots and priors were called upon to subscribe the Acts of Supremacy, by which the King's word was recognized as paramount in matters purely religious, as well as in questions concerning the property interests of the monasterial foundations of the kingdom. Were they able to evade this extraordinary demand, which many did by feigned compliance, they were yet entrapped by trumped-up charges of treason—confiscation being the real object of the king—and about sixty of them were condemned to death in this way. The monks who had not already run away were soon scattered abroad. Driven suddenly from their peaceful cloistered homes into an untried world, bearing the mark of the King's wrath upon them, they found scant mercy. A few sought asylums in the charitable ty of some distant manor-house, where in small groups they lived a life something akin to the old conventional life.

But for the mass of the one hundred thousand men thus turned But for the mass of the one hundred thousand men thus turned adrift upon a population of three millions of people, there was only the lingering misery of hopeless struggle and cruel want. They, mostly, knew no craft but that gentle one of the scholar which had saved, through all those darker days of steel-clad strife the world had known, the links that joined it to the arts and letters of the past. "The English monks were bookish of themselves and much inclined to hoard up monuments of learning." Of what happened to the greater part of these "monuments" stored in the abbey libraries at the time of the suppression, a letter to Edward the Sixth reporting upon this matter tells somewhat:

upon this matter tells somewhat:

"A number of them what purchased these superstitious mansions reserved of their library books some to scour the candlesticks, some to rub their boots, some they sold to the grocers and soap-sellers; and some they sent over seas to the book-binders, not in small numbers, but at times whole shipsful. . . . I know a merchant, which shall at this time be nameless, that bought the contents of two noble libraries for forty shillings apiece. A shame it is to be spoken! This stuff hath he occupied instead of gray paper the space of more than these ten years, and yet he hath store enough for as many years to come." years to come.

It has been estimated that the royal coffers were replenished from the sale of the monasterial properties to the extent of about fifty millions of pounds sterling of the money of to-day. Royal Harry had spent it all and was turning a hungry eye upon the colleges and hospitals when he was opportunely taken off.

The abbey buildings, sold and bought in most cases for the materials in their construction, were already dismantled, and become mere stone quarries for the neighborhoods in which they stood, until of these great establishments we have only a few crumbling ruins left to-day.

Among the older streets of Glastonbury one finds in the walls, here and there, stones which are recognizable at a glance as having been despoiled from fane and cloister. Enough remains to tell us what we have lost, and to fill us with wonderment at the ignorance of the nation and disgust for the brutal rapacity of the tyrant who ruthlessly destroyed so much of England's noblest architecture.

Of the earlier portion of the Abbey Church, St. Joseph's Chapel,

Of the earlier portion of the Abbey Church, St. Joseph's Chapel, with its round arches and very beautiful Norman transition and Early English detail, there is still a good showing, the massive masonry and great wall-surfaces of that earlier period having surprisingly well withstood the wear and tear of frost and storm through the centuries since their splendor was dismantled.

"They built as they
Who hoped these stones should see the day
When Christ should come; and that these walls
Might stand o'er them till judgment calls."

Of the great buildings belonging to the domestic offices of the abbey, the dormitories, the refectorium and the schools, in which last the Benedictines of Glastonbury were educating usually some two or three hundred boys, only the so-called "Abbot's Kitchen"

two or three hundred boys, only the so-called "Abbot's Kitchen" remains. This interesting relic is supposed to date from the time of Abbot Chinnock, who was in power at Glastonbury from 1374 to 1420. Its remarkably good state of preservation is due largely to the great stone roof which has defended it from the ravages of the weather. It has suffered greatly, however, with all the rest, from vandalism. The kitchen is of generous proportions, being thirty-three feet and six inches square inside the walls. Great arched doorways open through the north and south walls pierced above by square headed mullioned openings. Large three-light tracery-headed pointed windows break the east and west walls. The buttresses are very handsomely built, having finely-cut copings and rounded fronts. Other members are richly detailed, and there are interesting carved heads projecting in full relief from the cornice at interesting carved heads projecting in full relief from the cornice at intervals. The fireplace arches are thrown across the interior angles and swinging out above easily resolve the building into the octagonal There was a separate stack to each fireplace, rising from the

form. There was a separate stack to each fireplace, rising from the corners of the kitchen to, perhaps, a little more than the height of the base of the lantern, but of these there is nothing left.

The battlements which formerly crowned the walls have also quite disappeared. The stone roof is a handsome piece of masonry. From the inside it is seen to be carried on eight arched ribs which spring gracefully from the angles of the octagon merging above into a stone ring, which forms the base of the cylindrical inner wall of

the lantern. The outer shell carries up the octagonal form in a vertical prolongation of the hips of the roof, the treatment being continued in the roof of the lantern itself and to the finials. There

continued in the roof of the lantern itself and to the finials. There are eight openings into the inner cylinder, through the vaulting between the ribs, by means of which the room was well ventilated and the smoke of the great meat spits quickly carried off.

The whole structure was beautifully adapted to its purpose. It was built throughout of cut stone, and most thoroughly, combining lightness and grace of form with the requisite strength of construction in a manner which makes it a most interesting bit of architecture and altogether a very charming design. There is nothing to indicate what was the treatment of the corner chimney-shafts, which doubtless made a striking feature.

doubtless made a striking feature.

The generous size of the kitchen is explainable by the fact that the household of the abbot numbered three hundred persons, while his guests were numerous, of high rank, and often attended by great

Another striking relic of the abbey is the great tithe-barn which was also something more than a century old in the time of the "Last Abbot," being ascribed with the kitchen to Abbot Chinnock. One comes upon the old barn quite suddenly on the way out Chickwell Road to the Tor. The east gable as it presents itself to the road is most effective in mass, though the ground has been raised on that side some three feet or more and the base has therefore disappeared, the roof so gaining a greater apparent proportional height, and pleasingly picturesque effect.

The real elevation is best seen in the west end, or would be were it not so crowded upon by the hideous sheds of the dairy-farm, of which, not so crowded upon by the hideous sheds of the dairy-farm, of which, unfortunately, this grand old mediæval granary is now a belonging. The whole north side is unapproachable except through the muck of a vast cow-yard, the boundary wall of which appears in the drawing of the east end, abutting against the barn itself — battlemented, fortunately, and, therefore, not quite so obnoxious as it might have

been, but still to be wished away.

It seems a great pity that this remarkable old structure should not have fallen into hands which will lovingly and reverently preserve it

have fallen into hands which will lovingly and reverently preserve it as a rare architectural monument of great beauty and interest. It is yet in a surprisingly good state of preservation and, such is the solidity of its construction, will probably survive many centuries more if cared for; as it is, many slight dilapidations and changes are occurring and the old barn is suffering irremediable damage.

The building is cruciform, having its major axis east and west. The great doors, by which laden wagons are driven into and through the barn, are in the north and south ends of the transepts, or porches. The height of these doorways to the point of the arch is nearly fourteen feet and the width of the opening is ten and a half feet. Smaller doors in the side walls of the transepts have been walled up. The threshing-floor was in the middle of the barn, between the great doors. Enough light comes in through the narrow slits which are centered between the buttresses in the side and end walls. These slits have a very widely-splayed jamb inside and a small splay outside. small splay outside.

The gables have each two beautiful cross-loops, and above, in the The gables have each two beautiful cross-loops, and above, in the peak, a small and striking window of a triune form of tracery, which Pugin likens to the roof-windows of the aisles of Westminster and the clerestory windows of Lichfield, "formed, like these, of segments of three circles arranged in a triangle." The detail of these little windows is quite rich and beautiful. The cross-loops suggest a purpose of defense, for they are identical in form with those found in the walls and towers of great castles of the period. The side slits also seem designed for a like use, and the massive masonry of the whole structure would have rendered it impregnable in case of siege. whole structure would have rendered it impregnable in case of siege. The walls are four feet thick, the buttresses are two feet five inches wide, projecting three feet beyond the wall line.

Inside the barn there is only the great roof to see. This is a remarkable example of the massive braced and framed carpentry of Gothic England, "put together without a nail" the dairy folk proudly Gothic England, "put together without a nail" the dairy folk proudly inform visitors, sound in every timber and good for a long time to come. The roof construction is, indeed, more elaborate and ornate than many churches afford. Double tiers of stout tie-beams swing across between the main rafters. These with their great braces, and the heavy braces filling the panels between the purlins, are gracefully arched and chamfered. By carrying the timbers well down into the wall the thrust of the great roof was brought against the massive buttresses. The latter are irregularly placed, the distances between them varying from twelve to eight feet, and as the main beams coincide with the buttresses, the bays of the roof are also of unequal length. of unequal length.

The exterior of the old barn astonishes the modern observer by the finished and costly character of its masonry, and by the amount of good skilful work given to the mere ornamentation of its well-designed features. The most important sculptures are the half lifedesigned features. The most important sculptures are the nair infessized statues above the east and west gables, which represent clerics of high rank in ancient ecclesiastical vestments. These figures have now, unfortunately, lost their heads. High up on each of the four gables is a well-carved relievo, the symbol of one of the four Evangelists, St. Matthew in the east end, the winged cow of St. Luke on the north, the eagle of St. John on the west and the lion of St. Mark on the south, and within an obtusely cusped quarterfoil in an outer circular frame.

The square-headed mullioned windows over the doors of the transepts are handsomely membered; the label-moulding brought down

almost to the sill, has a good effect. The window over the north door has been entirely blocked-up, the mullion is gone and a single stone is left to suggest the form of head tracery. The south window is still entire, but is sadly in need of repair and will soon, doubtless,

The transept gables terminate in crocketed finials and the flanking buttresses are finished with a handsome coping, from the ridge of which are carved out mediævalized figures of crop-eared mastiff dogs. The effective lines of the coping stones of the several gables are to be noted; and the corbels springing from the top stone of the end buttresses are carved into heads of interesting character and good workmanship.

With its massive walls, dignity of outline, beauty of detail and elaboration of ornament, the old barn of Glastonbury Abbey has scarcely an equal among the few surviving examples of the great

tithe-barns of the old monkish days.

The bishop's barn, on the the Recreation Ground west of the palace moat at Wells, is an older building and of greater length, I think, but not so handsome in finish. It is seen to great advantage as it stands free of incongruous surroundings, and, happily, it is wellcared for by the authorities of the church and town and not likely

to suffer neglect.

Doulting barn differs somewhat from the other two in having two transepts and at Pilton is a splendid old pile which still enjoys the

crowning beauty of a mossy, time-stained thatch.

The last two have suffered much from vandalism and lack of care, and it is greatly to be deplored that they, as well as our old Abbot's

Barn, should not be saved from ruin.

A. B. Bibb. Barn, should not be saved from ruin.



MALL hospitals are being built so often nowadays that the book before us is of value to all who have to do with such institutions, though it deals more with the methods of the establishment and maintenance, and with the perhaps, more purely business questions which confront the promoters of hospital movement than it does with the purely technical side of the subject. The book is of value to the architect by reason of a very clear and practical supplement which, after a brief summary of the general practical supplement which, after a brief summary of the general architectural requirements, takes up and thoroughly illustrates and analyzes a typical hospital-building. The subject is by no means exhausted thereby, but the analysis has a distinct value in that it thoroughly illustrates one hospital building rather than merely touching upon a number of different types. The volume is small and handy for reference purposes, and while thoroughly up to date in the main principles of hospital establishment and maintenance is not incumbered with technical data.

The bibliography of architectural biography is very limited, even though the literature of England, France, Germany and Italy be searched, and in order to make up a list of three dozen works the latest students of the subject, M. Alexandre Du Bois and his successor, M. Élie Brault, have had to include in it the names of several architectural journals which, naturally, furnish the only available records of the lives and works of modern architects. Most architects are and have been such nameless quantities in the world's history, so far as contemporaneous notoriety or reputation goes, that architects are and have been such nameless quantities in the world's history, so far as contemporaneous notoriety or reputation goes, that it is rather odd that more pains have not been taken by some of them to make printed records on behalf of their fellows, so that a tardy justice may be done by posterity to those men whose real merit shall be attested by the approbation of a later day.

The proper way to make a biographical dictionary that shall have a popular value would be to arrange it topographically as a history of created buildings, rather than as a biography of their creators. The public is much more apt to wonder who did such a building that pleases them than to seek information as to what work a given architect, whose name they chance upon, has done. Even for

architect, whose name they chance upon, has done. Even for specialists, for architects themselves, this arrangement would be most useful, for their interest is usually localized and not distributed; most useful, for their interest is usually localized and not distributed; and while they would eagerly read the account of the interesting buildings in a given district and relish keenly the incidental biographies of the men whose work had excited their attention, they would give but listless attention to page after page of brief biographical notes arranged only alphabetically, where a master of the Renaissance period would be found sandwiched between two nonenities of the gighteenth century, who had secured a record simply because the eighteenth century, who had secured a record simply because they had lived.

Biographical dictionaries unquestionably have their uses and they ought to be in every public library, if not in most private ones, though, outside of a man's immediate family, the records they contain are of no special interest and of no great value to the general public. Still, as creators of enduring and visible results, it would seem that the biographies of architects should form a more valuable and interesting contribution to literature than the biographies, say, of

lawyers, doctors and merchants. The projector of the work ² before us, M. Du Bois, intended his work should be cast in the usual form of an alphabetical dictionary, a form which would have made it as useful as others of its kind, but no more so. Fortunately for the ultimate usefulness of the work, death prevented him from publishing it in this stereotyped form. The unfinished material, a vast quantity, fell into the hands of his son-in-law, M. Elie Brault, who quantity, fell into the hands of his son-in-law, M. Elie Brault, who was not himself an architect like the projector of the work, but, we believe, an advocate. Seemingly, when M. Brault began to estimate the amount of work before him, he thought it worth while to consider whether its intended form was really the most useful one into which it could be cast, and wisely decided that, although to change it meant added labor and delay, there was a better method that could be followed, as useful, practically, as the alphabetical method, while adding to it dements which greatly enhanced its value and while adding to it elements which greatly enhanced its value and increased its chance of securing a larger circulation and sale than a mere dictionary could have. The arrangement adopted by M. Brault lies between the topographical form we have suggested and the alphabetical form, and at once gives the work a place in the wide field of the general literature of architecture. Rearranging his material by historical epochs and schools of art, he introduces each chapter with a brief historical account of the various movements that characterized the time or the school, and then weaves into a fairly connected story the accounts of the lives of those architects who labored and achieved at that time. Of course, this method involves a sort of forward-and-back movement, and constant cross-reference, so that it takes one a little time to make sure that he has discovered all that the work contains relating to the single architect whose career one chances to be looking up. But this is a architect whose career one chances to be looking up. But this is a very immaterial drawback, when compared with the advantage of having the records made in such a way that the work can be read with enjoyment and profit, as ordinary books are, from cover to cover. It is thus a work that we can advise architects to procure, not as one to which they may now and then have occasion to refer, but one that can be read with pleasure and profit.

The work is divided into three small-quarto volumes of some four

The work is divided into three small-quarto volumes of some four or five hundred pages each, and is illustrated with many full-page portraits of the most noted architects, derived from sources as authentic as circumstances admit, ranging from an imaginary sketch of Demetrius, through sundry Mediæval architects depicted in sculpture on certain Gothic buildings, to enlargements of daguerreotypes of architects of the early part of this century.

No civilized country has been neglected, and the records of some semi-civilized countries, as well, have been examined, so that the work is very complete, so much so, in fact, that one of the faults most likely to be found with it is that some architect or some building somewhere has been overlooked.

The first volume treats of Antiquity, the Middle Ages, and the Italian Renaissance; the second deals with French Renaissance, the seventeenth century, and with the Roccoc; while the third begins with the Romantic school, and follows up modern eelecticism is all its remifications.

in all its ramifications.

Any work of so wide a scope, seeking to give a vast amount of particulars, must contain many errors, and it would be easy to point out many, especially in those portions where English and American architects and their works are concerned. But they are mainly merely typographical errors caused by inability to decipher a correspondent's chirographic efforts, and the several correspondents will probably draw attention to them before a second edition is sent out. Confusion of another kind is caused by translating into a supposed probably draw attention to them before a second edition is sent out. Confusion of another kind is caused by translating into a supposed French equivalent the title of some building which could only be positively identified by giving its title in the vernacular, foreign though it might be. Errors of this kind are easily recognized and can often be corrected by any reader, as well as those other errors which are due to every Frenchman's scorn for geography and orthography, except so far as these concern his own country. Against these errors, every foreigner who uses a French book is habitually on his guard. The work is made complete and serviceable as a mere biographical dictionary by a very good alphabetical index arranged in tabular form. Here are given the names of the architects, the country of their birth, and the dates of their birth and death, or in default of these dates the approximate date of their death, or in default of these dates the approximate date of their known work, while a final column refers to the pagination of these volumes where details may be found.

A too profuse use of the ditto mark by the printer has impaired the value of this tabulation in one particular, for in place of leaving the date of death blank, as M. Brault, of course, intended in the case of living architects, he has insisted in filling in the space with inverted commas, one consequence of which is that Mr. Van Brunt is represented as having died in 1839, though he was born in 1831, thus implying, when one looks at his record, a rather precocious architectural activity on the part of a child of eight years.

Every architectural school should have this work, and the libra-

rian in charge should be obliged to make use of it in preparing that topographical index for his own collections which we began by say-

ing would be so useful.

Here are records in detail of the work of some three thousand their works architects of various countries, specified by name and their works fairly identified by description. If we allow only five works to each

¹ Small Hospitals." Establishment and Maintenance, by A. Worcester, A. M., M. D. And Suggestions for Hospital Architecture with plans for a small hospital, by Wilham Atkinson, architect. 12 mo. cl.th, \$1.25. New York. John Wiley & Sons, 53 East Tenth Street, 1894.

^{2&}quot; Les Architectes par leurs Ocurres." Ouvrage rédigé®sur les manuscrits de feu Al Du Bois (de l'Ecole Polytechnique), Architecte du Gouvernement. Par Ene Brault. Paris: 1894.

man, here are means of identifying some fifteen thousand buildings, a considerable portion of which must be represented by photographs or engravings in the collections of the various architectural libraries, but which neither librarian nor student has yet been able to identify This information is here and accessible, but it is so voluminous that it would be a costly undertaking to print it, and, though we do not doubt that M. Brault perceived the desirability of such a tabulation as clearly as we do, we can easily understand why he abstained from its preparation.

If any of our readers care to add this work to their libraries, we should be well pleased to procure it for them, the cost being, in un-

bound form, ten dollars.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

HOUSE OF ELBRIDGE T. GERRY, ESQ., FIFTH AVE., NEW YORK, N. Y. MR. R. M. HUNT, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

HOUSE OF MR. CLINTON MACKENZIE, ARCHITECT, ELIZABETH, N. J.

This house is to be built of brick to plate, then framed to peak of gable with heavy timbers, pegged, the panels made by timbers to be filled-in with brick and the whole to be plastered very roughly on the outside with cement. The interior also to be rough plastered throughout and tinted. Trim and doors to be from detail, natural frickets and printed. The active house is 22' doors and 27' A'' fronters. finish and painted. The entire house is 32' deep and 37'4" frontage. All the contracts have been let and amount to \$4,400, which covers everything except gas-fixtures, mantels and grading.

THE ABBOT'S BARN, GLASTONBURY, ENG. SKETCHED BY MR. A. B. BIBB, ARCHITECT.

For description, see article elsewhere in this issue.

THE ABBOT'S KITCHEN, GLASTONBURY, ENG. SKETCHED BY MR. A. B. BIBB, ARCHITECT.

HOUSE FOR HAYTER REED, ESQ., OTTAWA, CANADA. MESSRS. HOPPIN & KOEN, ARCHITECTS, NEW YORK, N. Y.

ACCEPTED DESIGN FOR THE HIGH SCHOOL-HOUSE, MALDEN, MR. F. I. COOPER, ARCHITECT, TAUNTON, MASS.

[Additional Illustrations in the International Edition.]

INTERIOR OF BANQUET HALL, NEW YORK STATE BUILDING WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MESSRS. MESSRS. MCKIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y. [Gelatine Print.]

SKETCHES AND DETAILS AT RAGUSA, ITALY. This plate is copied from the Zeitschrift für Bauwesen.

INTERIOR OF THE ABBOT'S BARN, GLASTONBURY, ENG. SKETCHED BY MR. A. B. BIBB, ARCHITECT.

DOOR OF THE ABBOT'S BARN. GLASTONBURY, ENG. SKETCHED BY MR. A. B. BIBB, ARCHITECT.

THE TITHE BARN, DOULTING, SOMERSETSHIRE, ENG.

THE BISHOP'S BARN, WELLS, ENG. SKETCHED BY MR. A. B. BIBB, ARCHITECT.

SHIREOAK, HEADINGLEY, ENG. MR. F. W. BEDFORD, ARCHITECT, LEEDS, ENG.

This house, for Mr. J. E. Bedford, is now named Arncliffe, and has recently been built at Headingley, near Leeds. It was planned at an angle so as to obtain the best view, as shown on the plan. It is built of specially-made small red bricks and the roof is covered with Yorkshire stone slates of a most beautiful color, in varying tones of gray, yellow, red and blue. The surroundings of the house have been carried out rather differently since this days of the house have been carried out rather differently since this drawing was made. A higher terrace wall of pierced brickwork runs along the front with three steps up into the forecourt. A curved exedra-shaped wall with stone seat is built on the right instead of the straight one, with steps leading to the garden on a higher level. This garden is laid-out in a formal manner with box-edging, and a garden-house with

curved lead roof terminating the wall before mentioned opens on to it. The hall is wainscoted to a height of seven feet six inches, above which is a beautiful plaster frieze of wild rose. The dining-room has a beam ceiling which the architect intends painting with a sprinkling of flowers.

THE OLD GARDENS, HEADINGLEY, ENG. MR. F. W. BEDFORD, ARCHITECT, LEEDS, ENG.

THESE houses are built on the site of the old Botanical Gardens at Headingley, near Leeds. The old bear-pit belonging to the Gardens still remains close by. In planning these houses it was endeavored to get a decent hall to each house instead of the narrow passage generally found in houses of this size near Leeds. These halls are panelled to a height of about seven feet six inches, and one has a little ingle-nook. They are built of specially-made small red bricks, and the upper walls are tile hung.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; do they hold themselves responsible for opinions expressed by their correspondents.]

A CORRECTION.

MINNEAPOLIS, MINN., August 14, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, — In your effort to advise the world as to the present status of the Minnesota Capitol Competition, you permitted your hired men to print on the third line from the top of the second column of the 55th page of your current volume, "with a knowledge of the capacity of architects" in place of "with a knowledge of the rapacity, etc," as in the "copy." If you could but assure the world that the only "intelligent compositor" is now located in Boston, you might to a certain extent comfort.

MR. PINCH. you might to a certain extent comfort MR. PINCH.



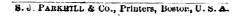
Boston, Mass. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts. New York, N. Y.— Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

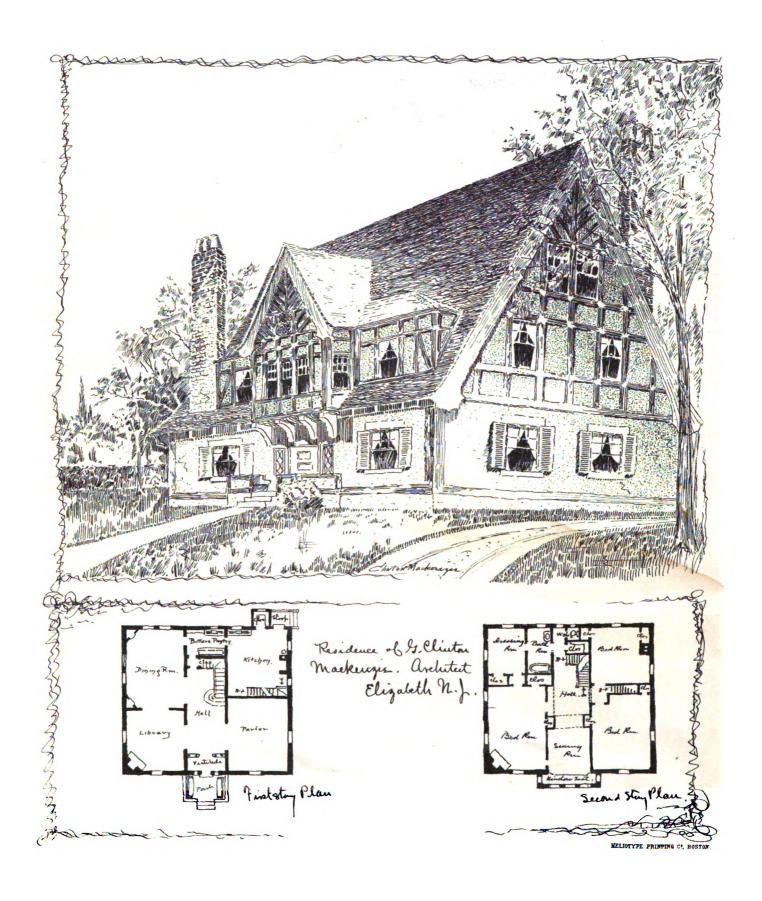
Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

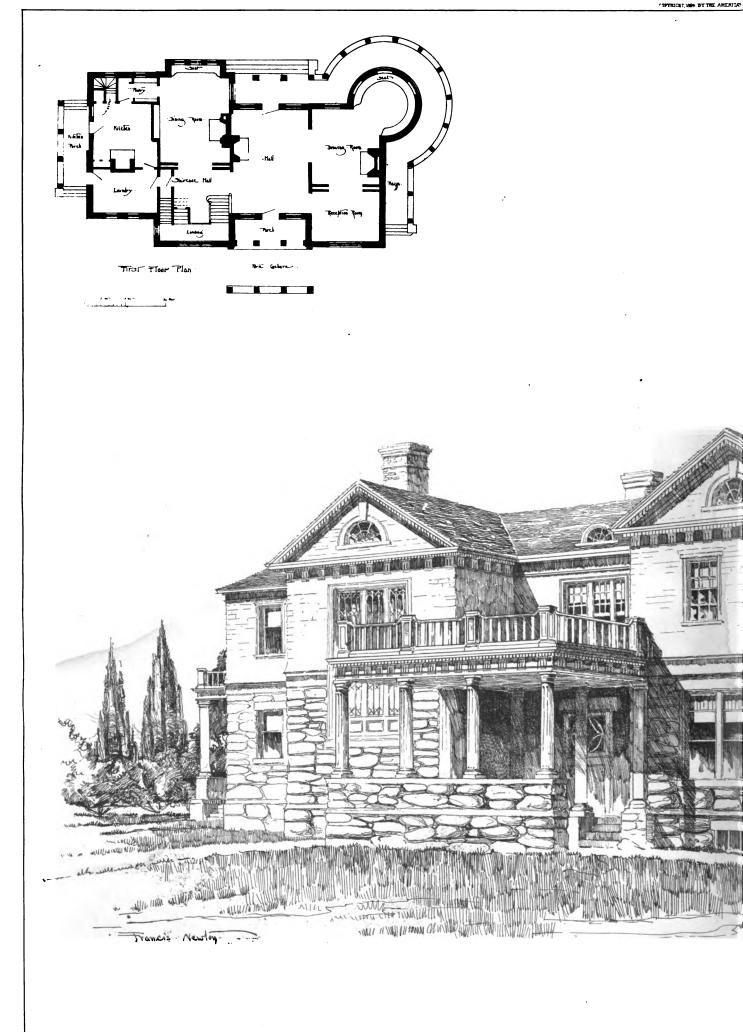


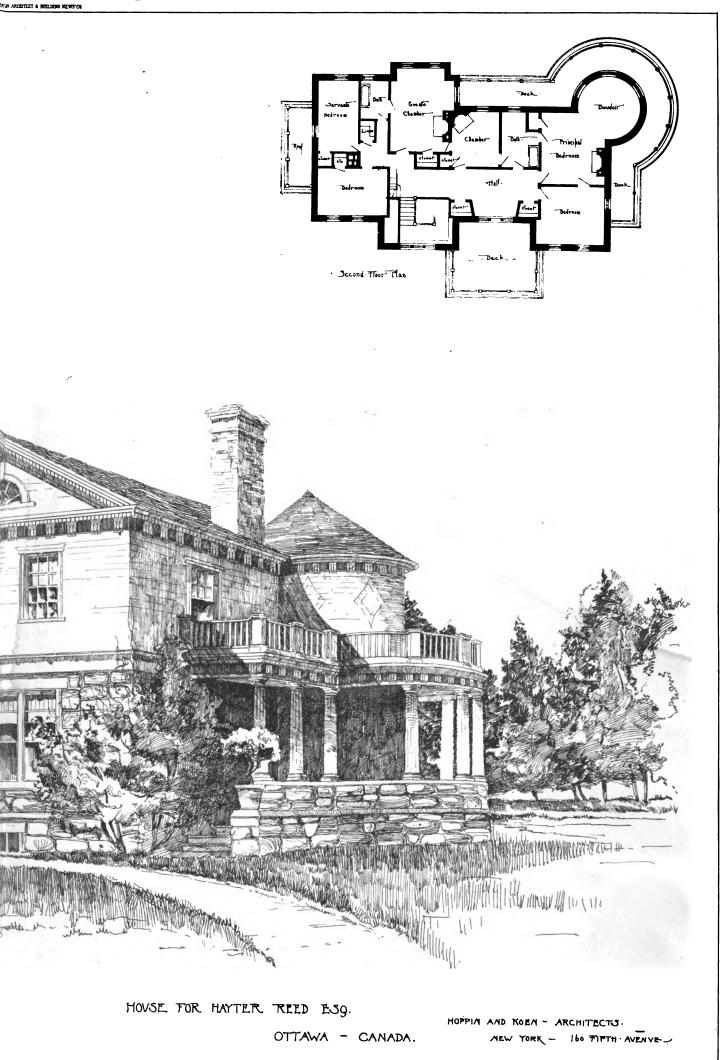
EXCEBDING THE ESTIMATES. — Complaints are numerous of the great excess of the cost of buildings as compared with the architect's original estimates. In public buildings especially has this been noticeable. The Philadelphia City Building, estimated to be erected at a cost of \$10,000,000, has already cost \$17,000,000 and is now expected to require a final outlay of \$3,000,000 additional before completion. It is fortunate for American architects that the old law of the Ephesians does not prevail here, for Vitruvius records the fact that when an architect was employed upon a public work he was required to declare the amount it would cost, and his goods were made over to the State. If the work cost one-fourth more than his estimate, it was allowed; if it were less, he was loaded with honors. But if the expenditure exceeded the prescribed limits, his property was sacrificed to make good the deficiency. It is said that Vanvitelli, having exceeded his estimate in a public work connected with the execution of one of the fountains of Rome, was mulcted in the sum of 5,000 crowns. — Fire and Water. EXCEBDING THE ESTIMATES. - Complaints are numerous of the great

Mammoth State of Barbarossa. — The sculptor Nikolaus Geiger is putting the last touches to his statue of Barbarossa, which is to symbolize the ancient kingdom in the Kyffhauser monument, to be unveiled in 1896. The Barbarossa appears at the end of a vestibule in the style of an ancient castle, on the steps of the throne upon which he is sitting like the sleeping figures of the courtiers, with fabulous animals of the old mythic world. Barbarossa is represented at the moment of waking from his long sleep. In his right hand is his sword, his left hand strokes his long, waving beard. Contrary to all other figures of the old hero, he is here represented as an actual emperor, with the features of a noble man. The whole monument, hewn from the rock, will be about eighty feet high. The figure of the seated monarch is about thirty feet high. — London Daily News.

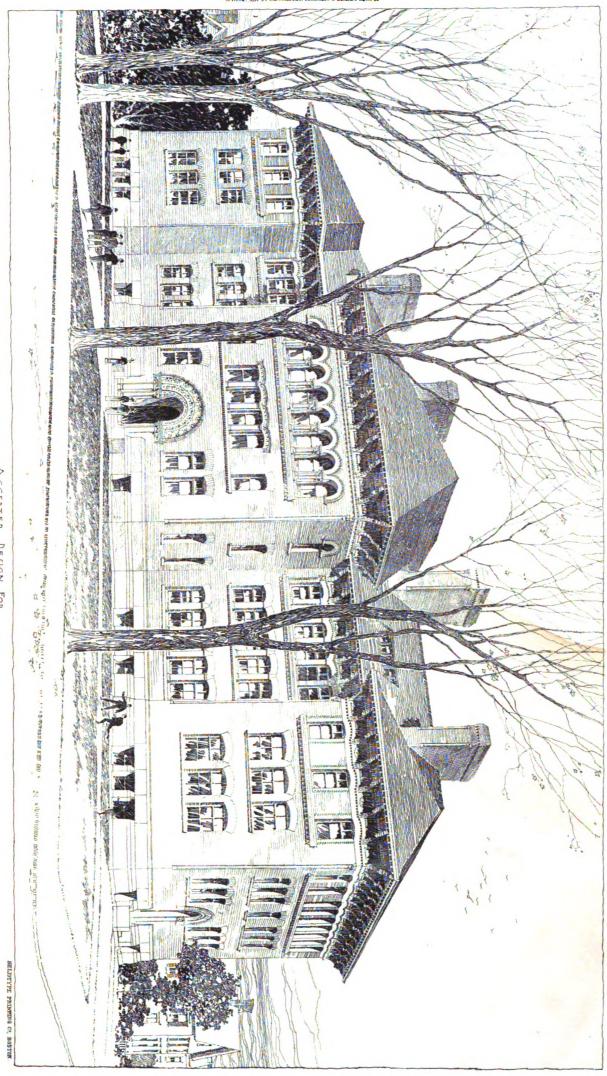






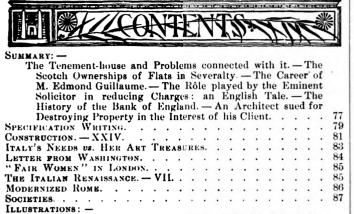


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Entered at the Post-Office at Boston as second-class matter. SEPTEMBER 1, 1894.



R. WILLIAM H. BRAINERD, a well known young architect of Boston, has been studying the tenementhouse problem with a coolness and common-sense which it is refreshing to see displayed in connection with the subject. For a long time, the word "tenement-house" has acted upon the oratorical class of reformers as a red rag affects a bull; and the whole subject of improving the habitations of the poor has been obscured by the rantings of people apparently totally ignorant of the subject they were talking about. According to Mr. Brainerd, "a clergyman of large experience in New York City" has the assurance to say, "I have about concluded that no soul ever went to heaven from a tenement-house." As two-thirds of the population of New York live in tenementhouses, this observation, as a contribution to social science, deserves to stand alongside the speech delivered in Congress, a few years ago, in which the orator informed his hearers that there were three hundred thousand professional thieves in New York City. We do not pretend to know so much about heaven as a clergyman, but we do know something about New York tenement-houses, and if modest contentment under unnecessarily wretched conditions, and brave effort to resist the temptations incident to those conditions can prepare people for heaven, the tenement-house population of New York, as a whole, has quite as little reason to dread the sound of Gabriel's trumpet as the society of Murray Hill. Nevertheless, although, as we sometimes think, the people who live in clean and comfortable houses might, with advantage, humiliate themselves occasionally by considering whether they could keep themselves as pure, physically and morally, in the midst of filth and temptation, as their poorer brothers and sisters in city tenements, there is no reason why the filth and temptations of those tenements should not be ameliorated.

As these people must, therefore, live in tenements of one, two or three rooms, the question for them is to have such tenements as decent and wholesome as possible. Everybody knows how much has been accomplished in this direction within the past few years, and more would probably have been done, had it not been for the whole matter. Already, thousands of people live in little city homes of two or three rooms, which are in every respect as well suited to family decency and health as apartments in the Fifth Avenue Hotel; and the number of such tenements ought to increase rapidly, and would do so, if as much

eloquence could be expended in commending them as in the indiscriminate abuse of every kind of tenement-house; and, with the growth of the system would come, as a matter of course, improvements in planning, to suit increased knowledge of the requirements to be fulfilled, and, perhaps, the development of appreciation in the tenants. As fast as better houses were provided, the municipal authority, in our large cities, could be depended upon to draw more strictly the sanitary regulations governing tenement-house construction and maintenance. People do not always realize that these must, at present, be very lax, for the reason that, if the tenants are ordered out of houses unfit for habitation, they have no other place to go to; and, until good houses are provided by those able to build them, the rookeries must be endured, or the people who live in them will have to camp in the streets.

As another branch of the subject, Mr. Brainerd advocates the adoption of some system by which portions of houses can be purchased and held by their occupants. He cites the Scotch practice, under which a man can buy, sell, or inherit a "flat," or single floor of a house, subject only to some slight contribution to general repairs, and the New York "Home Club" statutes, by which a similar result is indirectly accomplished through a perpetual trust; and observes that, in his opinion, the extension of such a system would do much to attach the poorer part of the population to the community, and satisfy that longing for some fixed possession, which, as he thinks, finds expression in the socialist dreams of the universal ownership by the State. This idea is new to us, and is certainly an interesting one; and the people who have leisure and knowledge for such matters might well make inquiry into the subject.

HERE are some things about the career of the late Edmond Guillaume which have a peculiar interest, as showing at once the respect for art, and the sincere democracy of feeling, of the French people. M. Guillaume was born in an extremely humble station, being the son of one of the town bill-posters of Valenciennes. Even in this country, although a person of such origin might, by other means, become immensely rich, it would be next to impossible for him to gain distinction, or even employment, in a profession where so much depends on personal relations as in that of architecture; and in England the difficulty would be even greater; yet the poor little "afficheur's" boy, even during his school-days, found his industry and talent just as much appreciated by his fellow-citizens as if he had been the handsomest and best-dressed child in Valenciennes. As he grew older, he developed a marked artistic talent, and, on his graduation from the town schools, he was sent, as a reward for his good conduct, to complete his studies in Paris, at the expense of the municipality of Valenciennes. He entered the School of Fine-Arts as pensioner of his town, and there remained for eleven years, gaining much distinction, until, in 1856, he carried off the Grand Prize, becoming thereby the pensioner of the Empire at Rome. A Grand Prize man is never afterwards lost sight of by the Government, and on completing his course at the Villa Medici, he was sent, at the public expense, to Asia Minor, with M. Perrot, now one of the most distinguished of archæologists, and Dr. Delbet, to study the archæology and architectural remains of that almost unknown region. The report of the three explorers was published, on their return, at the Government expense, and M. Guillaume was decorated with the star of the Legion of Honor, and elected Member of the Geographical Society, and the Society of Antiquaries, and Corresponding Member of the Institute of France. This was in 1863, the poor little Valenciennes boy having been for more than eighteen years maintained at the expense of the city or the State, which, far from feeling him a burden, was happy to encourage him still further by showering its honors upon him. His actual professional career did not begin until about 1866, when he was admitted to the Société Centrale des Architectes. The following year, he won, with the sculptor Doublemard, a competition for a monument in the Place Clichy. It was, however, the favor of the Government which brought him most employment, and, although he afterwards had a large private practice, he retained his appointments as architect to nearly all the Imperial palaces, and some of the Government Departments. To his subsequent services, as Professor of the Theory of Architecture in the School of Fine-Arts we have already referred. His reputation in later years was that of a scholarly, though rather cold and haughty artist, but he is said to have been very kind to his pupils, and always courteous and helpful to other architects.

THE British Architect tells a story which will give young architects food for reflection. A young engineer of good standing, a member of the Institute of Civil Engineers, was called in to advise a lady in regard to the sanitary condition of her house in London. He found that much needed to be done, and made a report to that effect. The lady then commissioned him to have the work that he thought necessary carried out, and soon after went abroad. When the work was done, the young engineer sent in his bill, amounting to thirty guineas. The lady being still absent, the bill was sent to her solicitors, a highly eminent firm. These eminent gentlemen took no notice of the bill, nor of the letters in which the engineer, after the lapse of a considerable interval, ventured to remind them of it. After several months of waiting, the engineer applied at the office of the eminent solicitors, but was put off on some pretext by the managing clerk. He thought then that he had waited long enough, and went to his own solicitor, and instructed him to bring suit for the amount of the bill. His solicitor was quite shocked at this proposal, and said that he really did not like to do such a thing with such a highly eminent firm of solicitors, but would see them himself about the bill.

YOON after this, the young engineer received a letter from the eminent solicitors, saying that they had received a communication from the lady, their client, and that they were instructed to offer him twenty guineas in full satisfaction of his claim. The engineer took this letter to his own solicitor, and said that his bill was thirty guineas, and he should not take a penny less. His solicitor told him that he had seen his eminent brethren, who had stated that they considered the bill too high, and were instructed to offer twenty guineas. The engineer then requested suit to be brought at once, but his solicitor refused absolutely to have anything to do with bringing suit against so eminent a firm. The engineer, thus cast upon his own resources, determined to do what he had better have done in the first place, and wrote to the lady herself, in India, stating what had happened, and asking her whether she was really dissatisfied with his bill, and if she had instructed her solicitors to offer him a smaller sum. next mail brought him a letter from the lady, enclosing a check for thirty guineas, with many apologies for the annoyance that her solicitors had given him, and assurances that she had never given them any instructions or authority whatever to ask any reduction from the bill. The engineer took the letter to his own solicitor, who was rather disconcerted, but said that he was sure there must have been some mistake, as the lady's solicitors were so very eminent. The letter was then shown to these eminent personages themselves, who made such apologies and excuses as came into their heads, and here the matter ended, unless, indeed, it should turn out that the engineer's solicitor sent him a bill of twenty-nine guineas for his own "services" in the matter.

THE whole little comedy is one which is so often played, under slightly varying circumstances, that most architects of experience will recognize the characters at once. The zealous young professional man; the good-hearted client; the eminent solicitors, whose reputation has been built up chiefly by their ingenuity in "making favorable settlements" for their rich clients, that is, in docking the people to whom their clients owe money of a portion of their just dues; the solicitor of less eminence, whose awe of his distinguished brethren is so great that he cannot even conceive of resisting their demands, — all these personages move through scores of little dramas, the dénouement of which is not often so satisfactory as in the present case.

HE Builder gives an interesting history of the Bank of England, illustrated by plans and elevations copied from drawings in the library of Sir John Soane, who was architect and surveyor to the Bank for nearly fifty years. The Bank, now the greatest financial institution in the world, is not, as most people suppose, a branch of the British Government, but a private corporation. The idea of it was, according to the Builder, due to William Paterson, a Scotchman, who,

in 1691, proposed to some of his friends, rich merchants, like himself, who were accustomed to meet at what they called the "Wednesday Club," that they should raise by subscription the capital necessary for starting a banking business on a large scale. The merchants of those days must have had plenty of money, for, when the subscribers received their charter of incorporation, in July, 1694, as the Governor and Company of the Bank of England, their capital was set at twelve hundred thousand pounds, all of which was invested in a loan to the Government, at eight per cent interest, while. in addition to the interest, the Government allowed the Bank an annual subsidy of four thousand pounds. The first Gov. ernor was Sir John Houblon, who lived in a handsome house on Threadneedle Street, where he had a garden. For a year or two the business of the corporation was carried on in Mercers' Hall. It was then moved to Grocers' Hall, where it was continued for forty years. About 1730, however, the Governor and Directors decided to erect a building of their own, and for the purpose, bought the residence of their late Governor on Threadneedle Street. George Sampson was employed as architect, and contracts, which still exist, were made for the erection of the building, which was to cost £13,153 7s. 9d. in addition to the old materials on the ground, and was to have an "Intabliture with moudillions," and "double Ionick pilesters," all "enriched according to Palladio," besides "a tin pan" in the front pediment. A part of this structure, including the "tin pan," still exists, forming one side of the open court entered from Threadneedle Street. From 1766 to 1783 extensive additions were made to the Bank buildings, by Sir Robert Taylor, who was not only an architect but a sculptor, and completed his work by executing a figure of Britannia, which still stands in the Bank. Taylor's death, 1788, Sir John Soane was appointed architect to the Bauk, and under him the present street fronts were erected, and very extensive additions made, the present building occupying the site, not only of Sir John Houblon's house and garden, but of a church, with its churchyard, two ancient taverns, the "Ship" and the "Crown," and of the original "Sun Fire Office," an institution apparently as old as the Bank itself, together with a large number of smaller buildings.

VERY curious case came up in the Brooklyn Special Term of the New York Supreme Court the other day. It seems that Mr. Walter Parfitt, the well-known architect, who has been building a church in Brooklyn, found some stones used in the church which, as he testifies, had already been rejected and condemned, as unfit for use. However that may be, finding them there, he made sure of his directions being followed for the future in regard to them by getting a hammer and smashing them. The contractor, one Shrump, sued the architect for destroying his property, and a commission allowed him some fourteen hundred dollars. The present suit is brought to have this award set aside, the architect claiming that the stones were destroyed by him in pursuance of his duty in defending the structure against danger, and after due warning to the contractor. The judge took the case under advisement, so that we do not yet know the result; but, as the points involved relate to the extent of an architect's powers in compelling compliance by contractors to his directions, the judgment will be looked for with interest. There is a story, whether authentic or not we cannot say, which relates that an owner found that a wall in his new house was being built with bondcourses only every ninth course in height, instead of every seventh course, as required by the contract, and knocked it over with a piece of heavy timber, and was sustained by a court in doing so; and, if it is lawful for an owner to destroy, without warning, a wall which is a little less perfectly bonded than the contract requires, it must be still more lawful for him to destroy, after due warning, stones which constantly menace the whole structure; and, if an owner could do so, there is certainly ground for claiming that his architect, who is unquestionably his agent for averting obvious peril to his building, not only could, but should, take, in emergency, such measures as the case seemed to him to require. Whether the New York court will hold this view remains to be seen, but New York courts have, particularly as compared with those of some of the agricultural States, a very good understanding of the relations of architects to owners and contractors, and the decision will, probably, be of great interest and importance to the profession.

SPECIFICATION WRITING.1

HAVE been asked by Professor Laird to talk to you on a sub-

ject connected with the practical side of my profession.

Now I do not know anything more practical than the matter of the preparation of building specifications, and if you will bear with me for a little while in discussing this uninteresting, but quite important question, I will try to tell you something about them based upon my own experience.

upon my own experience.
In reality, an architect commences to write his specifications when he commences his drawings,—one involves the other. The knowledge requisite for the one is as necessary for the other, and as the lines are drawn, the specifications form themselves. The insight into construction necessary to draw correctly indicates the ability to describe the work shown on the drawings. Without this ability

the drawings and specifications alike will be failures.

There is no one thing in our profession that has as much to do with personal success in its practice, as the ability to properly prepare specifications. And I do not in stating my idea as to relative importance except the question of design; because to one person able to discriminate at all between good and bad design, there are a great many who very clearly distinguish between good and bad business ability, and who will not fail to express their opinion of the architect who does not properly protect them, who, for instance, forgets to specify the stripping of walls, or the traps on plumbing fixtures, or the rain conductors. And the fact that the exterior of his house is an architectural "dream," or that the detail of exterior of his house is an architectural "dream," or that the detail of his mantels and stairway is "out of sight," will, in a certain sense, be only an aggravation of the offence, — a sort of adding insult to injury which he will not forget. And your chance of making a living at your profession, not to speak of a fortune, which is hardly possible, at least I have never heard of an architect dying rich, de-

pends upon the reputation you make as a careful practitioner.

To carefully write your specifications is indispensable to successful and conscientious supervision of the work; it is impossible ful and conscientious supervision of the work; it is impossible where they are drawn loosely or in a slovenly manner, and it is not worth while to handicap yourself in this way, and add unnecessarily to the inevitable load of responsibility and worry which will come legitim tely with the practice of your profession. It does not do for a professional man to make mistakes, and there is no hiding them in building; they are apparent for all time, and, like the fly in the pot of ointment, spoil the whole. Mistakes are two-edged swords. They destroy your client's confidence, and your own, the latter perhaps more disastrous to you than the first. Of course all this philosophizing applies also to the drawings, but if you prepare your philosophizing applies also to the drawings, but if you prepare your specifications with care and minuteness you will escape most of the pitfalls, and they will greatly help you to accuracy in the drawings.

The specifications bear somewhat the relation to the drawings that the arteries and veins do to the body, and they should, like them, extend from the foot to the head; from the footing stones to the cresting of the roof, and ramify in all directions, covering each little point of construction and material. They cannot be too full. Nobody ever got into trouble because he too minutely described the

work to be done, or the materials to be used.

work to be done, or the materials to be used.

To draw good specifications requires exact knowledge. You must know precisely what you want, and how you want it done. Your directions must be specific, as the name implies, and clear and simple in expression. Make your paths straight, so that the way-faring man, tho' a fool, shall not err therein, but make them narrow as well, so that he shall not have room to wabble. It does not follow necessarily that he will be a fool, though it has sometimes seemed to me that nothing short of idiocy could explain what seems to be an irresistible impulse that forces the average workman to do things exactly the wrong way, when the reverse is really easier.

It does not do to specify things generally, or to assume that "Oh, they will understand that." Believe me that they will not; if there is any possibility of a misunderstanding, it will be embraced. Do not leave your phrases until they are clear beyond any possibility of ambiguity, remembering always that it is too late to change the specifications after the contract is signed, and that it may be exceedingly inconvenient to have to explain clauses which are capable of more than one reasonable construction.

It is a great help to use the trade terms, names and grades. The builders understand them, and it will enable you to ascertain more readily whether you are really getting what you specify, and where it is practicable I would specify materials which have their quality marked on them. But, unless you have some reason for re-quiring a particular make, it is better to specify two or three makes, quiring a particular make, it is better to specify two or three makes, equally good, rather than the make of any one manufacturer. I know no class of men more disinterestedly honest than architects, or who so little let questions of money or profit have any bearing on their professional conduct. But it is possible that a misconstruction may be put upon a perfectly innocent act, and the requiring of the product of a particular manufacture may give rise to question, particularly if there are other goods of the same grade and general worth in the market, and it is well to avoid even the appearance of evil. In addition to this reason which I express with appearance of evil. In addition to this reason which I express with some hesitation, and which I am very well aware may be open to the charge of timidity, there is this other,—that to close out the goods

¹A lecture delivered before the Architectural Department of the University of Pennsylvania, by Mr. T. Roney Williamson, architect.

of all manufacturers but one, destroys the chance of competition. That these remarks are perhaps rather less practical than ethical is true, but they have something to do, nevertheless, with what has

been my practice in preparing specifications.

The sin peculiar to the specification is the sin of omission, and the greatest particularity will hardly insure against it. I use as a sort of safeguard a scheduled synopsis, and use it always, which I will show you and explain farther on, and which I have found of the greatest use, but which must be added to continually as the complexity of work and the increase in the number of appliances and methods become greater with the passing of each year.

In making drawings it is my custom, and that of other men as well, I have no doubt, to print upon them many notes as to things not of a nature to be clearly shown by the drawings, placing the notes on the parts to be explained, noting girders, beams and their sizes, sizes of flues and their linings, if any; finish of rooms; kind of flooring; kind of glass; and many other matters of that kind. They are really part of the specifications, and should be specified in them also, or, at least, attention called to the fact that such notes are to be taken as part of the specifications, in the general clauses of the specifications to which I will refer later on. One advantage of placing these notes is, first: That as they are made at the time the drawing is made, they are fixed there once for all, and are not liable to be forgotten, as they may be if you wait until you write the specifications; and secondly, that they are right before the builder's nose when he looks at the drawings, and he is not likely to

A not very usual thing, but a very convenient addition to a speci-A not very usual thing, but a very convenient addition to a specification is a table of contents, giving the page-number, and a list of the subjects on the page. It saves a good deal of time in the use of the specifications, and is very little trouble. And somehow, as there is never enough time and always too much trouble going, any labor and time saving devices are of value.

The working or detail drawings, in contradistinction to the contract drawings is a the plans and elevations are the final expense.

tract-drawings, i. e., the plans and elevations, are the final exponents of the contract-drawings. These drawings are made up from the contract-drawings and the specifications, from which last the methods of construction, size and kinds of materials must be derived. They embody both, and if it were possible to make the working-drawings with the contract-drawings before estimates are made, the specifications might be shorter, which would be desirable; and as it is impossible to make in many cases the word written as readily understandable as the word drawn, there might be less misunderstanding, which would be still more desirable. In this connection has a contract and might appendications and full nection let me say that exact and minute specifications and full working-drawings will enable you to build cheaply, an important thing to your client, who, if he be like most of us, is generally scheming to get a dollar's worth for ninety cents, because the bidders will not have to allow so much for "laps and slams," for the things not clearly shown or definitely specified, but which look the larger and more dangerous because they are undefined. As a general thing, when great differences in the amounts of bids occur, you may make up your mind that there is some want of clearness or of particularity in the specifications of drawings. The exception to this rule is caused by the irresponsible bidder who throws his hat at the drawings and guesses how much the work is worth, and who is either very high or very low; but in fact he should not have a chance to bid, as generally his hope triumphs over his experience, and he bids low and sometimes gets the building, to the ultimate scamping of the work, his own loss and also the owner's, and to the despair of the architect. It is this sort of bidder who grizzles the locks of the superintendent, and eventually brings his gray hairs in sorrow the superintendent, and eventually brings his gray hairs in sorrow to the grave. Avoid him, if possible, and care and firmness will generally enable you to dodge him, but you must avoid him before he bids; afterwards it may be too late, for your client having the easy idea that the architect is paid to watch the builder anyhow, is apt to turn a deaf ear to your suggestion that he take a higher bidder at an ostensible loss of the difference, expecting you to play stop thief, a sort of "I spy" game with the contractor, with the usual result of making for yourself, at the least, two enemies,—the owner and the contractor, and of having been unable to entirely owner and the contractor, and of having been unable to entirely protect the owner or curb the contractor.

There are some things you will require to specify which are diffi-There are some things you will require to specify which are difficult, almost impossible, to describe so that their value can be gotten at: stained or leaded glass for example, or an elaborate stairway or carving, and matters of that sort. My method in such cases is to put a price on them: for glass, by the foot, unless I intend very elaborate work, in which case I omit it and say so. If for a stairway, I name a lump sum, and specify whether that includes the horsing or not, and the finishing. For carving, I specify a sum of money to be allowed, or if very costly, like figure-work, omit it and say so. When a sum of money is allowed, you should state that the owner is to buy where he pleases, otherwise you may find some trouble in putting where he pleases, otherwise you may find some trouble in putting the work where it will be best done.

Forms of specifications vary somewhat, but in essentials they are alike. I presume you are familiar with their general make-up; in fact, it has been a matter of some debate with me how much of this talk is threshing of old straw and an old story to you. have concluded that it won't hurt you to hear again what you have already learned, and I may have said something that will help to impress upon you the instruction probably received before.

The specifications begin with the recital of the general clauses.

The general clauses are those which are to be observed and followed by all the trades connected with the work of the building, which call attention to requirements common to all, and are binding upon all.

The first of these refers to the architect and his authority, whether he is to supervise the work or not. If so, the clause is worded thus: "The work to be erected under his supervision and to his approval without reference to any other person." The sentence "without reference to any other person" is an interpolation of my own, but it is a good one, as it makes you the dictator as it were, the sole arbiter of the drawings and specifications. And while it seems to add responsibility, really lessens it, or at least simplifies it and will rid you of a good deal of foolish and annoying interference from both contractor and owner. It is occasionally objected to, some-times by the contractor, but not often, the contractor knowing from times by the contractor, but not often, the contractor knowing from experience the safety that lies in a court of last resort; more often by the owner, but I think it well to insist on it. It defines the authority of the architect positively, and rids him of the annoyance of having his decisions overruled. This does not refer to any question of values necessarily (the agreement usually providing that dispute as to prices, etc., shall be decided in some other way, as by arbitration), but to matters connected with the design and the meaning and intent of the drawings and specifications, where the architect is the only person who is qualified to decide, after all.

The second clause refers to the unity of the drawings and specifications, calling attention to the notes written upon the drawings as

and specifications, calling attention to the notes written upon the drawings as being part of the specifications and that drawings and specifications are to be taken together and not separately. Work shown or mentioned in either to be taken as if in both. This clause is intended to insure against omissions in either of the two, and is a valuable one. The utmost care may fail to include in both what may be in one or the other.

one or the other.

The next provision is one requiring the contractor to follow the detail-drawings as the final exponents of the contract-drawings, with the implied guaranty on your part that they shall show no new work or work not suggested by the contract-drawings, but which insures you an opportunity to correct or improve on your design up to the last moment within the bounds of the rights of the contractor.

Next, a claim of importance requires the builder to follow the figures on the drawings rather than to measure them with scale. Builders will use the two-foot rule if they are permitted, with unfortunate results, particularly where you have worked things down

fortunate results, particularly where you have worked things down in your planning to a very fine point. This same rule, generally the worse for wear, is not a safe instrument to use, particularly if your drawing is one ninety-sixth or one forty-eighth the full size, while the figured drawings, if properly checked, can be made exact without any possibility of doubt.

The last clause of the general clauses is one requiring the contractor and all trades to comply with all city ordinances and requirements; to pay for all permits, and to hold the owner free from all penalties for infringement of ordinance, or failure to comply with the same.

Some copies of specifications I have seen have more than these clauses; but I think that these embody all that apply directly to the work of the building, any other requirements belonging more particularly to the agreement.

The methodical arrangement of specifications should be this: Ex-The methodical arrangement of specifications should be this: Excavation, stone-mason and cut-stone, marble, bricklayer, terra-cotta, mosaic floors, tiling, cement pavements, carpenter, mill-work, plumber, tinner, plasterer, galvanized-iron, roofer, iron-worker, beams, etc., painter and glazier; heater, steam-work, engines, electric-work, dynamos, etc., lifts. Each trade should be complete in itself, and the specification should embody all of the work and materials required, and any work or materials to be done or supplied in connection with any other trade, as for instance, the tinner sometimes supplies registers, to sizes given by the heater contractor, which are set by the plasterer. You see these three trades require each notice that the others have to do with them. It is necessary, also, that if, for any reason, you vary the work usually done by any one that if, for any reason, you vary the work usually done by any one trade, you shall give notice to it, that either it shall include work not generally taken, or exclude work usually taken, as for instance, the painter I always require to furnish the glass. In some localities, the mill-man furnishes the glass for the general trade. If you wish to avoid any trouble, you must always say in the mill-work specifica-tion that he shall not furnish the glass, or omit it from the painter, and let the mill-man furnish it. You can require the plumber, if you choose, to put enamel paint on a tub or on a wall of a bath-room, or to supply casings of wood or marble for his fixtures. And the reason you do this is to avoid interference of one trade with another, and to make the plumber entirely responsible for his own work, so that he cannot plead for any breakage or spoiling of work that the carpenter, mill-man, or painter, or marble-worker, did it. Now when you have done this, you must notify the painter, mill-man, carpenter, the marble worker, that the plumber does this work, man, carpencer, the marole worker, that the plumber does this work, otherwise you may pay twice for it; that is, both trades may estimate on it, seeing it required on the drawings and clause No. 2 of the general clauses before them, which would be unfair to your client of course.

Builders sometimes object to the grouping of work in this way, and unless the trade whose usual business it is to provide the work or material is notified in his specification, it may make confusion: notification is sufficient, however. And thus while you make the plumber provide all marble-work required, you have let the marble

mason know that, and also to know where the specifications for that marble-work will be found, by your intimation in his specification. Always draw each specification, so that if the work is let separately, each man's work is in his specification complete, with nothing left for implication one way or the other.

With a general contractor as the builder (one man who assumes all the work) he is, of course, responsible to you and to the owner, and work or material specified anywhere in the specifications would be held from a level specific be held, from a legal point of view, to be his to do or furnish. But if your specifications are defective as to who of all those who contribute toward the work does each part, you can put your general contractor in a hole very easily, and he has a moral right to expect that when he gets his estimate from mason, plumber, or any one else, that they have taken all that is required, and that there is no such ambiguity as will cause him to lose money, instead of making such ambiguity as will cause him to lose money, instead of making his legitimate profit, and in which latter case he is likely to make your existence an unpleasant one as far as your connection with that

building is concerned.

Your specifications must agree with the drawings. There must, of course, be no conflict between them. Each building is sui generis. There can be no general specifications prepared which will meet every case. There are forms of specifications printed which proceed upon the idea that you shall cross out any clauses not applicable to the house for which they are intended to be used, leaving in those which are; but you are very likely if you use them, to leave in parts which have no business to remain, and you will have specified cornices where outlookers are shown; turned posts where squares are drawn; stone heads where arches are shown, and a thousand other inaccuracies, small perhaps, but all requiring explanation, and lessening your control of the work; in addition to this, crossing out, or interpolating, gives rise to question sometimes, and

it may be hard to prove, from such specifications, their correctness.

I have prepared some copies of the synopsis of the specifications
I am accustomed to use. If you will refer to them I will go over
them hastily, noting some of the more important matters, and will not further take up your time.

GENERAL WORKING SYNOPSIS OF SPECIFICATIONS.

EXCAVATION. - REFER TO GENERAL CLAUSES.

EXCAVATION.—REFER TO GENERAL CLAUSES.

OP soil. Disposal of earth, cart it away? deposit on lot—to grade—in piles?

Depth of cellar. Depth of trenches. Inside, outside.

Width of footings. Vault. Grease-trap.

Well:—Include walling; include man-hole.

Trenches for pipes. Include digging and refilling.

Shoring of walls—adjoining. Shoring of earth banks, if necessary. Pumping of water, if any. Cleaning of old wells; filling of same.

STONE-MASON.—REFER TO GENERAL CLAUSES.

STONE-MASON, - REFER TO GENERAL CLAUSES

- Cellar and backing: sizes, kind. Facing: sizes: kind of

Stone: — Cellar and backing: sizes, kind. Facing: sizes: kind of wall — broken-range, random-coursed, coursed.

Dressed — how? rock faced?

All on natural bed: jambs dressed, arrises cut. Specify bonding.

Footings, stone: — Depth, width, kind of stone, sizes; squared? edged?

Footings, concrete: — How mixed? who furnishes forms? Thickness layers, ramming. What cement? what sand? what proportion of each?

each? Testing of cement: — For fineness — what mesh? Tensile. Compression. Boiling. Thickness of walls: — Piers, sizes. Cellarway. Foundation for steps. Levelling of walls: — For joists, sills, frames, heads, plates. Leaving chaces for pipes, posts, flues. Building in blocks, strips, frames.

Skew-backs for arches. Arches: what soffit, if necessary? cut?

rough-face?

Mortar: — Any cement? what kind?

Lime, any particular kiln or make?

Sand: — Bar, road, creek, bank?

What proportions of lime, sand and cement, if any?

Pointing: — Lime mortar. Marble dust. Cement: What kind? any sand? what style of pointing?

Anything as to bad earth foundations, rock in cellar: blast it, sledge it, plug and feather. Owner to pay per perch? owner to have?

Old malls: — Stone to be rough?

have?
Old walls: — Stone to be reused, removed, contractors, owners.
Who supplies water? scaffolding, who supplies?
Cut-stone: — Pier-caps, chimney-caps, girder blocks.
All sizes, kind of stone, dressed.
Ashlar: how thick? how clamped?
Sills: moulded? plain? Cut to wash, throated.
Heads: moulded? plain?
Platforms: steps, balustrades, moulded rails? turned or square balusters?

Bands: moulded? plain? left for carver?

Columns: full diameter? half diameter? fluted? left for carver? Caps: left for carver? moulded?

Caps: left for carver? moulded?
Pilasters: plain? panelled? left for carver?
Cornices: size; projection; bed.
Curbing: what kind? all sizes.
All sizes, kind of stone, style of dressing.
Marble or slate treads and risers to iron stairs?
Yone-parement: — what kind? all sizes; dressed? rough?
Any cutting for doors, man holes, plumbers' fittings?
Remember to set sills free in middle.
Remember that fine limestones must be laid in lime-mortar and that cement must not touch limestones in joints or backing.

Remember to require covering of all cut-stone to protect from injury while building.

Remember that some stones rust and run —look out for that. Specify who furnishes water: contractor? owner?

How, by fixed sum?

Name carver, sum.

derpinning: — How done, by the day? on contract? any particulars?

What kind of stone? Conshohocken? cement? neat? with sand,

Is underpinning to be done with stone or brick?

(To be continued.)

CONSTRUCTION.1 - XXIV.

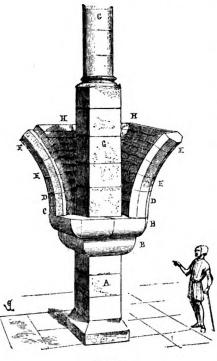


Fig. 127.

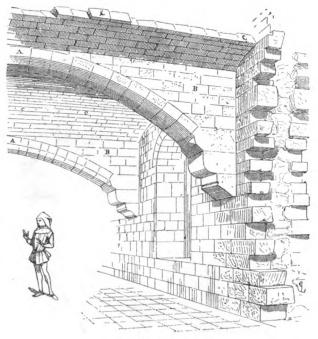
ME mediæval builders give proof of a great deal of independence in the combinations of vaults belonging to civil edifices; everything suits their purpose, according to the occasion or necessity: the cradle vault, the Roman groined vault, the pointed, semicircular or stilted Gothic vault, the vaults com-posed of ranges of arches supporting ceilings or penden-tives. When they no longer followed any but one sort of vaulting in ecclesiastical architecture, that is to say during the thirteenth and fourteenth centuries, they had, nevertheless, the good sense not to apply this system, apply this system, only in so far as it offered advantages in civil constructions. Frequently the very large buildings neces-

sitated the erection on the interior of one or two rows of supports to carry the floors of the upper stories, as we have before observed; in this case the ground-floor was generally vaulted; but as these slender supports placed one above the other and only braced by the floors had no stability, they did what they could to give them sufficient base, at least on the lower piers carrying the vaults, and fearing to crush the skew-backs of these vaults under the load, they made them independent of the piers.

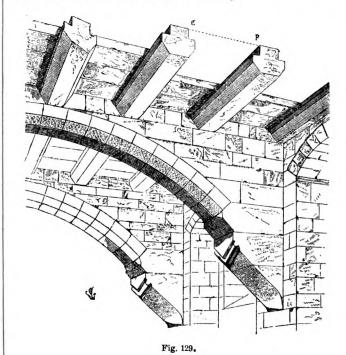
Thus, for example (127): given a pier A of the ground-floor intended to carry vaults; they laid on this pier two or three courses, B, making corbels on the four faces; thus a shoulder C was obtained. At the angles were placed skew-backs D following the diagonals of the squares, to receive the voussoirs E of the vault; in the centre, the pier G was carried up free to receive the upper timbers, then the vault spandrel H was filled with rubble. Neither the skew-backs of these vaults nor their spandrels carried any load and the masonry of the haunches only braced the piers. Fearing the action of the thrust of the ground floor on the walls, which were not always buttressed, the builders frequently made very heavy corbels along these walls to diminish as much as possible the thrusts and disperse their walls to diminish as much as possible the thrusts and disperse their resultant over the entire wall, or even over the interior facing only. Upon these corbels they were then able to place segmental arches which required less rise. Abandoning groined or pointed vaults, they carried vertical tympani B, on the large arches A, perpendicular to the walls (128), up to the level of the extrados of the key of these arches, A; then they sprung over these tympani segmental cradle vaults, C. In this way they succeeded in vaulting over large spaces without requiring much rise and without lowering the springings so much as to interfere with the passageway. By multiplying and bringing these arches nearer together they were able to replace the vaultings C, with flags making a floor placed on stone purlins (if materials were suitable), as shown in Figure 129. These purlins had rebates, thus bringing their upper surfaces level with the flags shown by dotted line E-F. These methods of building obtained for a long time without sensible modifications, for we still see constructions of the fifteenth centrum which reproduce these simple impresing tions of the fifteenth century which reproduce these simple, imposing and severe dispositions. The finest example which we know of these civil constructions, in which corbels play a very important part, is the castle of Hoh-Kænigsbourg, near Schelestadt.2

One could almost take the principal rooms of this Château for thirteenth-century constructions, whereas, they were not built until the fifteenth century.

But Alsace had kept the good old traditions of the Gothic epoch, pecially in civil architecture. The principal building of the especially in civil architecture.



Château Hoh-Kænigsbourg abutting against the rock (130), is built only of interior buttresses with a very thin exterior wall on the court only of interior buttresses with a very thin exterior wall on the court side. It has four stories; the ground-floor, which was used for a kitchen, has a segmental-cradle vault resting on very flat arches of ashlar, sprung from one pier to the other. The first story is ceiled by means of large dressed lintels, carried by strong corbels; the parallelograms left void between the lintels are filled with rubble. The second story is covered by a wooden flooring whose principal girders are carried on corbels built into the piers. A third story has a semicircular cradle vault, resting upon lintels—and on large corbels similarly arranged to the first story. This upper vault carries a platform or terrace covered by flags. The perspective section (Fig. 130) gives the general appearance of this peculiar construction. It should be stated that the local materials (a reddish sandstone) are adapted to these bold methods; the employment of such thin lintels, adapted to these bold methods; the employment of such thin lintels, of such wide span, would be inadmissible for us with our calcareous materials from the Seine, Oise or Aisne valleys.³



But in civil and military architecture, even more than in ecclesiastical architecture, the nature of the materials had a very marked

¹From the "Dictionnaire raisonné de l'Architecture Française," by M. Viollet-le-Duc, Government Architect, Inspector-General of Diocesan Edifices, trans-lated by George Martin Huss, Architect. Continued from No. 961, page 91. ² See the ground plan of this Château under the word Château, Figures 30, 31, room M.

³ In the sixteenth century an accident compelled the owners of Hoh-Kænigsbourg to spring arches under the ceilings of the first story.

influence in the selection of methods of construction; this example is a proof of it. The longitudinal lintels between the buttresses and the transversal ones from one buttress to another have voussoir joints. If we make a longitudinal section of this building, each bay gives us (Fig. 131).1

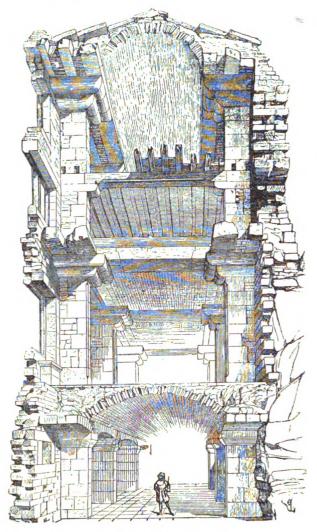


Fig. 130. Castle at Hoh-Kenigsbourg.

It is impossible for one to form an idea of the majestic grandeur of these buildings unless he has seen them. Luxury is not considered here; it is pure construction and the architecture takes no other form than that imposed by the judicious employment of the materials; the principal points of support and the lintels are alone in cut stone, the rest of the structure in stuccoed rubble. We are free to admit that this way of understanding civil architecture has a peculiar attraction for us. It should be said that the Château of Hoh-Kænigsbourg is built on the summit of a high mountain, eight months of the year surrounded by snow and fog, and that in such a situation it would have been very ridiculous to choose architectonic forms which could only have been appreciated by the eagles and the vultures; that the savage aspect of these structures is in perfect

harmony with the ruggedness of the place.

In this connection we shall be permitted to make an important observation. We think ourselves the first to appreciate that which is called the *picturesque*, because since the seventeenth century no one has found any beauty, except in parks planted à la Française, in right-angled and symmetrical buildings, in terraces veneered with stones and cascades with lead-lined channels. Without denying the value of nature thus arranged by art, we must, nevertheless, recognize the fact that nature left to herself is more varied, more free, more grandiose and more essentially beautiful. A Seignior of the Court of Louis Fourteenth or of Louis Fifteenth would very much prefer the parks of Versailles or Sceaux, to the wild vistas of the gorges of the Alps or the Pyrenees; the Duke of St. Simon, who had no office at Court, preferred to dwell in a narrow and gloomy apartment at Versailles than to live in his charming residence, la Ferté. But our mediæval lords were, on the contrary, sensible to these natural beauties, they loved them because they dwelt among them. Without speaking of the very lively appreciation of nature to be found in the numerous romances of the Middle Ages, we see the castles, the manors, the abbeys, are always so situated as to give their inhabitants views of the surrounding localities.

Their construction harmonizes with these localities; wild and imposing in abrupt places; fine and elegant at the foot of laughing slopes, on the banks of tranquil rivers, in the midst of verdant plains. In these houses, the views of the most picturesque points are always arranged with skill and in such fashion as to present unexpected and varied aspects. In studying the civil constructions of mediæval times, it is, therefore, necessary to take into considera-tion the locality, the nature of the climate, the site, for all these things exercise an influence on the builder.

A building which is suitably arranged and constructed on a level site, in a country of gentle and tranquil aspect, would be ridiculous on the top of a savage cliff surrounded by precipices. Another one by its severe and even harsh character seems to grow out of the desolate soil where it rises but received a process of the desolate soil where it rises but received a process of the desolate soil where it rises but received a process of the desolate soil where it rises but received a process of the desolate soil where it rises but received a process of the desolate soil where it rises but received and constructed on a level site, in a country of surrounded by precipices. desolate soil where it rises, but would appear deformed and coarse surrounded by fields and meadows.

Those barbarous men, as they are considered by most people, were then sensible to natural beauties and their dwellings reflected, so to speak, these different sorts of beauty — harmonized with them. We, who are civilized and who pretend to have invented the picturesque, build elegant pavilions on some rustic site, which seems to have been intended to carry a fortress; and we build massive structures on the bank of a streamlet running through a meadow. This would lead us to believe that these mediæval barbarians loved and understood nature, without making much ado over it and that we, who boast of it on every occasion in prose and in verse, look at it with a careless eye, without being sensible to its beauties. Centuries are like individuals, they wish always to be considered gifted with the qualities which are wanting in them and care very little for those which they do possess. Everybody fought for religion in the sixteenth century and nine-tenths of the combatants on both sides did not even believe in God. They prided themselves on chivalry and on refined manners in the seventeenth century and their minds turned very strongly, even at that epoch, toward positive ideas and the satisfaction of material wants. In the eighteenth century they conversed only about virtue, nature, gentle philosophy, when virtue was scarcely in vogue, when nature was looked at through the glazed window of one's chamber and in lieu of gentle philosophy,

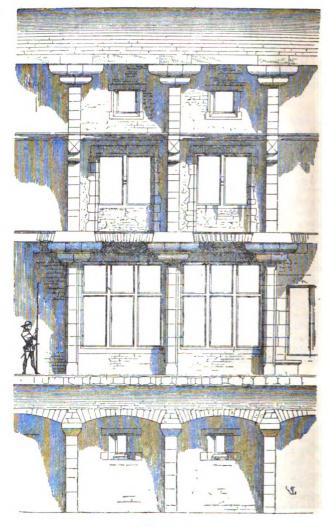


Fig. 131.

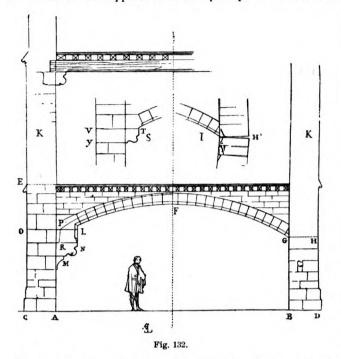
the only sort which was practised was founded on the assured well-

being of one's self and one's friends.

But to return to our buildings: the system of corbelled constructions was very much in vogue from the twelfth century in civil structures; it is, in fact, economical and full of resources, whether

¹M. Beswilwald, who has made plans of the Château of Hoh-Kænigsbourg with the greatest care, has been kind enough to put his drawings at our disposal.

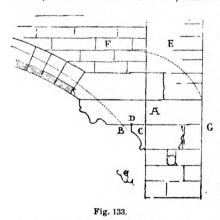
for carrying floors, for avoiding very great thickness of walls and considerable foundations, receiving the framing, carrying the overhangs, obtaining more extensive surfaces in the upper storics of buildings than on the ground-floor, providing for subdivisions for communicating staircases from one story to another, offering shelter, etc. It was another application of that principle of the mediæval



architects, which consisted in employing active forces instead of passive forces; for a corbel is a lever which needs a counterpoise in order to fulfil its function. Corbels have the advantage of not producing any thrusts, always difficult to counterbalance in constructions where the apartments are planned for special purposes, with thin walls cutting one another irregularly. They require less rise than arches, or can neutralize their thrust by placing the skew-backs outside the face of the walls, which is easily demonstrated. Let AB (132) be the opening of a room whose flooring is supported by arches, as was shown in Figures 128, 129; AC, BD, the thickness of the walls; CE the height between joists. If we carry the arch GF on the wall, even admitting that we have a heavy weight at K, there is reason to fear that we shall exercise such a thrust from G to H that the wall will buckle outwards, for the resistance from G to H that the wall will buckle outwards, for the resistance of the fricton of the bed GH will not be sufficient to prevent a slip; or if there is no slip, the length GH is not such that the bed may not or if there is no slip, the length GH is not such that the bed may not open outside and fall off inside, as is shown at I, an effect which will produce a buckling of the wall and consequently the fall of the arches. But if we have a strongly projecting skew-back L, and two corbel courses MN, and supposing that K' is a reasonable weight, we can counteract the slip by a much more extended bed LO and by a greater friction; the curve of resistance exercised by the arch, which curve touches the bed LO, at P, will meet there a resistance which will resolve itself into a line PR, more or less inclined according as the weight of the upper load K' is less or greater.

If this load is a heavy one from the point R, the resultant of the

If this load is a heavy one from the point R, the resultant of the thrusts might become vertical, and fall within the interior face of the wall, which would matter little; that is all that we could expect.



The builder took the precaution in this case of putting, at least, one course with its interior face vertical to the perpendicular from the meeting of the arch with the corbelled skew-back, for he thus augments the resistance to the thrust by the friction of the beds of two stones; while if he put only one corbel course under the skewback, as indicated at S, he would have only the resistance of the bed TV to counteract the thrust, and the buck-

When builders ling of the wall might result at Y as it did at H'. could not for any cause give to their corbelling the height of three or four courses, they obtained very resistant stones and (133) they placed them with sufficient projection as shown in section A, to make the curve of pressure of the arch fall at B within the interior face of the wall; this gives the stone A a lever action — they, therefore, support it by

a slight projection C; its lever movement would then describe the arc of a circle of which D is the centre. To overcome this lever movement there is the weight E beside that of the masonry spandrel movement there is the weight E beside that of the masonry spandrel F. The leverage being overcome, the corbel A has no other tendency than to slip from B toward G. Then the problem is to make the friction sufficiently great on this bed DG by means of the vertical weight E to prevent this slipping. Corbels then possess two properties: that of carrying weights on the principle of levers heavily weighted by the load at one end, and the action of resistance to obligue thrusts by the suggestion of the surfaces of friction ance to oblique thrusts by the augmentation of the surfaces of friction. Thus we see that in all cases the mediæval builders employed active resistances, that is to say a system of equilibrium, instead of the principle of passive resistance of the Roman construction.

[To be continued.]

ITALY'S NEEDS VS. HER ART TREASURES.

PROPOS of Italy's financial distress and one method by which its impoverished exchequer can be temporarily replenished, Mr. C. A. Dougherty, late United States Secretary of Legation,

Mr. C. A. Dougherty, late United States Secretary of Legation, at Rome, writes as follows to the New York Tribune:

Every one in the Eternal City will remember that, only a few years since, the noble house of the Borghese, owning enormous tracts of real estate and superb villa properties in different parts of the Province of Rome, fell from their high estate with a dismal crash, because all their lands were unremunerative. In the galleries of their city palace and of the Porta del Popolo villa were art works of a total value to ransom an empire. Prince Borghese saw the storm coming some years ahead, but not one treasure was taken from the galleries and put under the auctioneer's hammer, because the proud and sensitive nobleman could not bring himself to stain the family honor by trading for bread the art collection that his the proud and sensitive nobleman could not bring himself to stain the family honor by trading for bread the art collection that his ancestors had spent centuries in perfecting. And so, in the year of grace 1891, the noble family fell. They went out from their palatial home, out from the Rome where they have been honored for ages, and are now living perhaps in obscurity. Dignity stands in their lives to-day as the only compensation for all else they have lost; and the sentiment that exiled them does not keep decay from crumbling the furniture, the dust from gathering thick on the marble statues, or the sun from shrivelling the precious canvases on the walls.

In his palace in the Corso, in Rome, lives another nobleman, of lineage as illustrious as the Borghese, but of temperament dissimilar, and of practical mind. When the building fever was at its height lineage as illustrious as the Borghese, but of temperament dissimilar, and of practical mind. When the building fever was at its height a few years ago, and enormous dwelling-houses, within the city and outside the gates, were run up like magic, this Prince thought to increase his riches as a landlord, and became one of the largest builders. In 1889 there were residences in the city for 150,000 more people than Rome contained, or was likely to have for many years to come. The houses that cost so much to build brought in little or no revenue, and many of them were occupied gratuitously by people of the poorest classes. The ambitious nobleman was nearly bankrupted. In his Corso palace, however, were two rich galleries of paintings. He tried to sell them to the Government, but the Government was in no condition to diminish its exchequer to enlarge its art collections. He then put himself in communication with a certain foreign government and with several enormously rich connoisseurs. Clever artists, who made a specialty of copying famous paintings, were engaged in the Prince's gallery. Several original "old masters" went out from Italy to other lands, while marvellously exact fac-similes, with all the complexion of age, took the vacated places in the old frames, and went back to their respective positions on the walls, to look down, half-pityingly and half-hypocritically, upon the visitors, who, with guide-books in hand, stood admiringly before them and wondered at the beauty that outlasted so many centuries. The galleries had remained closed during six months, and when they were reopened there was nothing to indicate that everything of interest was not exactly as before. And the practical Prince exchanged sympathetic winks with the to indicate that everything of interest was not exactly as before. And the practical Prince exchanged sympathetic winks with the counterfeit presentments, and his coffers were gratefully replenished since the day when the workmen were first put in the palace "to repair some rotten rafters."

This business-minded nobleman is not unique in the current annals of Rome. The Boncompagni and the Ludovisi demolished their historic villas, and on their sites erected blocks of painfully-modern apartment-houses. The late Prince Barberini cut off huge their historic vilias, and on their sites erected blocks of painfullymodern apartment-houses. The late Prince Barberini cut off huge
strips of land from the gardens surrounding the family palace on the
Via Quattro Fontane, and sold them for building-lots. And there
were many others among the noblemen of Rome who did the same.
These princes hewed boldly upon the preserves of family pride,
ignoring the menacing spectre, clothed in the mighty majesty of all
their ancestors, that foretold a tale of direst woe. Woe quite as
dire, probably more inevitable, and certainly more imminent, would
have fallen like a plague upon all their houses if they had not have fallen like a plague upon all their houses if they had not sacrificed sentiment to necessity; so what man will blame them for purchasing exemption from present hardships at the expense of the

shadows of splendor?

It was only the existence of the Pacca law that made the act of the prince who sold his own property illegal, for the statute defining monumenti publici comprises certain private property as well as the possessions of the State. When it was framed, not only all Italians, but men of other nations as well, approved the provisions that

prohibited the removal of the historic relics and the artistic treasures out of the country in which they had had their home for centuries, and where their poetic surroundings blended in a harmony that captivated the imagination. There was no thought then that the day might come when these precious objects could buy the welfare of the nation. But an unforcement are her against the desired. fare of the nation. But an unforeseen era has arrived. The natives are the fall of Italy or the sacrifice of her treasures. The alterhour is not one in which to weigh a queen's jewels against her life. Beset by difficulties that seem impossible of adjustment, confronted by an appropriate of the same impossible of adjustment, confronted by an appropriate of the same impossible of adjustment. by an enormous and increasing debt, overburdened by taxation and menaced in her honor, the Nation stands a modern Niobe, majestic menaced in her honor, the Nation stands a modern Niobe, inagestic in her sorrow, eloquent in the resignation with which she views the afflictions of her children, and pathetic in the patience with which she waits her doom. While desolation spreads her preying brood over all the land; while the King and his Ministers are in despair, and over the poor peasant's emaciated body the night wind blows fever through the cracks in his crumbing hovel, the wail of "sentiment" becomes as the thin screech of the owl in the thunderous pleading of humanity.

The Prime Minister recognized that the plaint of the hungry citizen appeals more keenly to the Government than the vauntings of sentimentality when, in his speech to the Italian Congress on May 4, he said: "Humanitarian questions are crowding national ones further and further into the background."

The Government need only answer with the one word "necessity" the protests of those who call it a sacrilege to let the ancient treasures go out of Italy. But against such protests may also be cited many strong arguments. In the first place, no thought of sacrilege comes into the consideration, or no apprehension of abuse of the venerated treasures, for the country or individual purchasing one of them would be none the less proud of the precious possession, or cherish it less tenderly than Italy. Then, moreover, the proverbial contention of the dilettante that art has no nationality, and that its treasures belong to the world, may be hurled back upon the protesters. Hand in hand with this might go the reminder that many of the greatest statues in the Capitoline and Vatican museums, in the Uffizi Gallery and elsewhere throughout the country, were wrested by the invading Romans of ancient times, despite the pleas of sentiment, from the Greeks; that the obelisks that mark so many squares in the Eternal City were brought as tributes from Egypt, and that the sacred seven-branch candelabra that has been lying for centuries upon centuries under the mud of the Tiber was carried to Rome by the imperial legions who broke the heart of Judea by the destruction of the Temple of Jerusalem. If sentiment was not respected in their acquisition, why should it be invoked now, to the detriment of that nation that is the heir and successor of Imperial Rome? Si monumentum quæris, circumspice. The Roman of to-day need only look about him, in his strolls through the city, to see on all sides the evidences of the subordination of sentiment to utility, and in some cases, indeed, an absolute absence of all sentiment whatever. The practical, logical lesson will be ever under his eyes. He will see that the great basilicas were helped, in their construction, with stones and metal from the Colosseum. He will learn that tion, with stones and metal from the Colosseum. He will learn that the huge baldacchino in St. Peter's was built of bronze torn from the roof of the antique Pantheon. He will know that the majestic tomb of Hadrian is now occupied as a military barracks, and that the tomb of another Cæsar has been converted into a public circus. In one of the naves of the baths of Diocletian he will find a stable. In many of the small osteria, or wineshops, within and outside the city, he will discover ancient pedestals serving as tables or seats for the humble family of the dealer; and ancient or mediæval inscrip-tions carved in stone, and taken from some demolished house or wall, will stare at him through a beard of rough grasses and weeds upon some dumping-ground outside the city gates.

If some one offers the more practical contention that when her

museums and galleries are stripped of their treasures, Italy will be robbed of those attractions that draw foreigners thither every year to contribute to her commercial prosperity, it may be none the less practically answered that those possessions that more particularly make the entire country unique in the world will still remain. The Government cannot sell the Colosseum, which will stand for centuries to come, as it has since the time of Flavius, teaching to all ages ries to come, as it has since the time of Flavius, teaching to all ages the power and glory of the antique days. One may, indeed, paraphrase Byron and predict that even when Rome shall fall the Colosseum will stand. Others of the great ancient edifices throughout the whole country, and those stupendous architectural marvels of more modern times, cannot by any physical possibility be comprised among the monuments that the Government can sell to other nations. They form parts and parcels of Italy, as ineradicable as its sacred soil and its illustrious history, which alone will always invest the country with fascination for all men as long as civilization survives.

The Government itself can have no justifiable excuse for refusing to seek relief by the sale of its monuments, on the plea that it respects the sentiments of those who protest, or shares those sentiments itself. Every province in the Kingdom contradicts the sincerity of such a plea. The Pacca law itself is a denial of it, in that it virtually removes the privileges of ownership from a private individual or a corporation to be vested in the State. All the splendid palaces or historic ruins that have been confiscated by united Italy from the crushed dynasties that flourished formerly in different parts of the peninsula are reminders that sentiment was

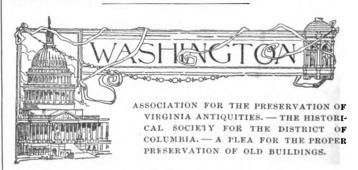
recognized as no deterring element when the policy of the new King-dom was shaped. Pompeii, Herculaneum and Paestum would else have the right to plead to day for some pity, in place of execration, for the defunct Kingdom of the Two Sicilies. "Sentiment" was regarded as the plaint of feebleness when the voice of the Vatican was raised in protest against the invasion of Rome; and it did not avail to preserve the temporal power of the Pope in his capital, nor to keep the great properties of the church throughout the country from passing into the hands of the Royal Government. The supremacy of necessity over sentiment has established as the chief residence of Italy's King the Quirinal Palace that was formerly the home of

of Italy's King the Quirinal Palace that was formerly the home of the pontiffs.

If then, as it would certainly seem, there is no obstacle beyond a small popular sentiment to impede the sale of some of her vast treasures for the help of the country, why does the Government hesitate? It cannot hope to find a permanent cure in increased taxation. The people are poor to the edge of destitution, and their strength is too exhausted for further burdens. Rebellion and dissension are only repressed by force. Italians like Polti and Ferrara are swelling the ranks of anarchists and law breakers in other lands. are swelling the ranks of anarchists and law-breakers in other lands. are swelling the ranks of anarchists and law-breakers in other lands. Starvation will soon be scattering skeletons from the Alps to Messina. It cost years, gold and blood to build up the present Kingdom; and the whole world's tears would bewail its fall. Its welfare is precious to mankind. All men watch its progress with solicitude. It is too young as a nation to die when any sacrifice can save it. It has everything to live for. Its royalty is beloved by all the people. Its soil is as fertile as ever. From a fleckless sky the sun shines as always on a beautiful land. The only clouds are in the hearts of the people, who are poor and hungry. The Government can control the impending storm, and avert it from Italy, if it will. Let it take sentiment, too, for its prayer; the sentiment that will plead take sentiment, too, for its prayer; the sentiment that will plead for the salvation of the country at every cost; and which, compared with any small stream of protest, would rush and roar with the with any small stream of protest, would rush and roar with the impetuous force of an ocean. Every patriot would unite in the profound and universal chorus. The very soil would give vigor to the surging prayer, and the statues themselves, if they had voice, would petition to be sacrificed for the country's good. Pasquino and Marforio would forget their cynicism, and would beseech the citizens, like the oracles of old, and as Cicero did in the Forum, to hold the country's welfare as the dearest thing of all. Michael Angelo and Raphael, in their place among the immortals, would rejoice that their handiwork had helped to save the Italy they loved so well. And all the world would be grateful that no more And all the world would be grateful that no more

Domestic fury and fierce civil strife Shall cumber all the parts of Italy;

and that the ages and the arts that had made her the mother of the universe had also saved her as a Nation.



NOTHING makes a country more interesting than buildings with historical associations. In this country the preservation of such buildings has usually been a matter of indifference. Where they have been preserved they rarely, if ever, escape the mania for remodelling. Their old features, which should have been retained, have been changed out of all semblance to their original selves to suit the whim of some architect, builder or committee. Victor Hugo in "Nôtre Dame" describes this craze for change so admirably that I quote his words, which apply with equal force to the older and better buildings in this country.

"One can distinguish on its ruins three kinds of lesions, all three of which cut into it at different depths: first, Time, which has insen-

of which cut into it at different depths: first, Time, which has insensibly notched its surface here and there and gnawed it everywhere; next, political and religious revolution, which, blind and wrathful by nature, have flung themselves tumultuously upon it, torn its rich garment of carving and sculpture, burst its rose windows, broken its necklace of arabesques and tiny figures, torn out its statues, sometimes because of their crown, sometimes because of their mitre; lastly, fashions even more grotesque and foolish, which, since the anarchical and splendid deviations of the Renaissance, have followed each other in the necessary decadence of architecture. Fashions have wrought more harm than revolutions. They have cut to the quick, they have attacked the very bone and framework of art; they have cut, slashed, disorganized, killed the edifice in form as in symbol, in its consistency as well as in its beauty. And when they have made it over — a presumption of which neither Time nor revolution at least have been guilty—they have audaciously adjusted it in the name of good taste. . . . Wrinkles and warts on the epidermis! this is the work of Deeds of violence, brutalities, contusions, fractures! this is

Time. Deeds of violence, brutalities, contusions, fractures! this is the work of revolutions. . . . Mutilations, amputations, dislocations of the joints, restorations! this is the Greek and Roman barbarian work of professors. Tempus edax, homo edacior, which I would be glad to translate, 'Time is blind, man is stupid.'"

There are few of the old buildings in this country to which this outpouring of Victor Hugo could not be applied with profit to the history of the country. As it is a better piece of pleading than I have ever seen, I quote it. What more effective monuments could be raised than the maintenance of the buildings in which a great deed was done, in which a noble life was lived?

When restored by fashion in another dress, the observer uncon-

When restored by fashion in another dress, the observer unconsciously connects it with the age of the fashion and its halo is gone.

The Society for the Preservation of Virginia Antiquities was organized in Williamsburg, Va,—the seat of art, learning and

fashion in Colonial days.

Its object is to restore and preserve the ancient historic buildings and tombs in the State of Virginia, and to acquire by purchase or gift the sites of such buildings and tombs with the view to their pres-

ervation or perpetuation.

This Association has been duly chartered by the State of Virginia and is empowered to buy and hold real estate, with a principal office in Richmond, Va., and branch offices in other parts of the

It is under the management of prominent ladies of the State,

It is under the management of prominent ladies of the State, assisted by an advisory board of prominent men. The families of the directors have been connected with the history of the State from its beginning. Such names as Lee, Ball, Cabell, Page, Carter are familiar to all. Mrs. Fitzhugh Lee was the first President, and Miss M. V. Smith is in charge of the Alexandria branch.

The first piece of work undertaken by this Association was the purchase and restoration of the old powder-house in Williamsburg. The home of Mary Washington, Fredericksburg, was then purchased and repaired. The Association at the present time has undertaken the preservation of what remains at Jamestown. Twenty-two and a half acres have been given to them, which includes. I believe, the half acres have been given to them, which includes, I believe, the original site of the town. The James River is at present gradually undermining the bank, so the Association is making an effort to

obtain money first to put up a sea-wall.

As Virginia is probably richer in history than any other State in the country, this Association will probably be one of the most active But in their cure of old buildings great care should be used. The archæologist and architect should be one — they should be careful to preserve, not remodel. Fashions of to-day, which it is so hard

ful to preserve, not remodel. Fashions of to-day, which it is so hard to keep out of a piece of remodelling, should give place to the fashion of the day when the building was erected. . . Within the last few months an historical association has been established in the City of Washington, one of whose aims is at least the preservation of the records of old buildings, and possibly its constitution would include the restoration and preservation of old buildings. This is a move in the right direction in our city, where old work is connected almost invariably with the history of the country. the country.

"FAIR WOMEN" IN LONDON.

ALKING round the Grafton Galleries one wonders how most of the beauties gained their reputations. Fashion, no doubt, had something to do with it; but, again, how did the fashions arise? How came it that most of the women Reynolds painted had small noses, Cupid's bow lips, dark eyebrows, and expressive, brown eyes; whereas Gainsborough's ladies have pale or no eyebrows, beady eyes, long noses and thin lips? On the other hand, Rombeady eyes, long noses and thin lips? On the other hand, Romney's women have sleepy eyes with large drooping lids, with little, pointed chins. Who can mistake a Lely or a Van Dyck? But where is the beauty? There is no doubt about the beauty of Romney's Lady Hamilton, the Emma Lyon who beguiled Charles Greville, married his uncle, Sir William Hamilton, and brought the greatest commander of the day, Lord Nelson, to her feet. One can understand the fascination of the woman; and, moreover, all her portraits are more or less heautiful, and resemble each other. But where is are more or less beautiful, and resemble each other. But where is the charm in the celebrated Mrs. Sheridan, by Gainsborough? the Elizabeth Linley who married the witty playright, and who, painted Elizabeth Linley who married the witty playright, and who, painted by Reynolds, becomes a different person. Then turn to the wonderful Comtesse de Grammont, "La belle Hamilton," who was all but tossed over by the Count when he left England. The lady's brothers, with drawn swords, asked him if he had not forgotten something. "True," he replied, and offered the lady his hand. No more beautiful are the other ancestors of our noble families, the notorious Barbara Villiers, duchess of Cleveland, who, being the daughter of a viccount and the wife of an earl, might have been daughter of a viscount and the wife of an earl, might have been content without soiling herself by her connection with a dissolute sovereign. Charles II's ideal beauty was curious, consisting mainly content without solving netset by the connection and solvereign. Charles II's ideal beauty was curious, consisting mainly in sensual lips, and a shameless desire to uncover those parts of their persons which decent women always clothe. All Sir Peter's "Beauties," including Nell Gwynn, and Evelyn's "famous and, indeed, incomparable beauty," Mrs. Jane Middleton, are all but plain women, according to our views.

Again, what can Rossetti have felt when he painted his "Veronica Veronese," with her square chin, scarlet lips, goilre throat, and high cheek-bones? Is this his ideal of beauty? Verily, beauty, like other things, is passing strange!

other things, is passing strange!

The gallery contains excellent examples of the four R's - Rubens, The gallery contains excellent examples of the four its — Rubens, Rembrandt, Reynolds and Romney, — the kings of portraiture. By Rubens, the exquisite "Anne d'Autriche," wife of Louis XIII, showing all his fine drawing and subtlety of painting. It is worth contrasting this with Rembrandt's "La femme à l'Éventail," belonging to the Queen. Both women are clad in lace collars, and one sees the difference of the handling of the two artists — Rubens's treatment being the finer in the rendering of the transparency of sees the difference of the handling of the two artists — Rubens's treatment being the finer in the rendering of the transparency of the lace. The Dutchman's flesh has all that golden glow which his best pictures possess, as, for instance, the "Saskia" at the Cassel Museum; but the Fleming gives us a face in broad daylight with no conventionalities of shadow — it is all brilliant light, and touched with such defenses that little paint seems to have been used. Is not Rubens, after Velasquez, the finest of portrait painters? He is stronger than Van Dyck, more subtle than Rembrandt, and a finer colorist than Repunded. colorist than Reynolds.

colorist than Reynolds.

Many are the Sir Joshuas hereabout — good, bad, and indifferent; the lovely "Perdita" — Mrs. Mary Robinson, author of several novels and poems, an actress and the admiration of George, Prince of Wales; and the delightful "Georgiana, Duchess of Devonshire," tossing up her child. Still more delightful, because in repose instead of action, is Romney's "Mrs. Carwardine and Child," the very perfection of a baby-picture. How exquisite is the turn of the mother's head, as she looks down upon the child nestling beside her. And the hands! In all the gallery there is not such another pair, plump, white, "maternal hands," as George Eliot has said. Opposite is a portrait by Mr. W. B. Richmond, and near it is Rossetti's "Veronica Veronese" giving the student an opportunity of comparing the hands of the modern painters, and of appreciating Romney's at their just value. Here, again, is the subtlety of painting in all its beauty. Mrs. Siddons as "The Tragic Muse" is here; not the grand sitting portrait from Grosvenor House, but the striding lady grand sitting portrait from Grosvenor House, but the striding lady grand sitting portrait from Grosvenor House, but the striding lady with head bound up in a napkin, holding a dagger in one hand, and a mask in the other. Did the little maid "Collina," daughter of the Earl of Upper Ossory, have an unfortunate love affair, that she never married? Standing with her gown tucked up, her rosetted shoes and crossed hands, she is an ideal child by the child painter per se. Here again, one sees a type. How many of Reynolds's children have those slanting eyes and pointed chins which have become so exaggerated in the "Robinetta" of the National Gallery. Gainsborough is fairly well represented. "Mary Bruce, Duchess of Richmond," has all his characteristics—the elegance and refinement, but the weakness and uncertainty of handling. Of Greuze's superciliosities nothing need be said, but that, being pretty, they are in their place in a gallery of fair women.

ment, but the weakness and uncertainty of handling. Of Greuze's superciliosities nothing need be said, but that, being pretty, they are in their place in a gallery of fair women.

Antonio More's heroine of Schiller's "Don Carlos" is a splendid example of damask and jewel painting, not necessarily to the detriment of a powerfully-painted face.

Although one is not surprised at finding the gallery full of women's portraits, it is somewhat monotonous. "How very droll that these painters only painted women," is not a very wise remark under the circumstances. But is not an exhibition exclusively of portraits somewhat dreary? And is it not a relief to turn to Mr. Sargent's grand study of blue and green — Ellen Terry as "Lady Macbeth" — to Mr. Herkomer's study in white, the celebrated "Miss Grant," or to Mr. Watts's truly beautiful head of "Mrs. Langtry," certainly one of the most charming faces in the gallery, if not the most beautiful? Sir Frederick Leighton's grand "Corinna of Tanagra" is a splendid type of woman; and Mr. J. J. Shannon's "Iris" is delightful in spite of it being but an echo of Romney.

Comedy adds little to the show, proving that women have no sense of humor, as some one says, or, what is more likely, that the "fair women" scarce dare affect a smile, lest it diverge into a ghastly grimace. But Etty, nevertheless, contributes a "Hebe" which is somewhat, if unintentionally, comic. Imagine a lady with her hair dressed in "bands" (one of his friends, perhaps) watering her roses while only semi-attired!

It seems a pity that the exquisite art of miniature painting should have did out. What can be more beautiful as norteriture than the

It seems a pity that the exquisite art of miniature painting should have died out. What can be more beautiful as portraiture than the work of Cosway? On the other hand, nothing can well be more detestable than Sir William Ross's smirking ladies. In Paris the art is reviving; and it is quite possible it might in London, eventually, displays the possible was a possible to the possible of the possi displace the peculiarly unsatisfactory photograph; for whether touched up, or left with its exaggerated lines, the latter is no more truthful than the miniature, and far less beautiful and durable.

S. BEALE.

THE ITALIAN RENAISSANCE.1-VII. NOTES FOR ARCHITECTURAL STUDENTS

HE route laid down for the travelling class, from Rome to Florence, was to have passed, as already outlined in a preceding number, through Orte, Spoleto, Perugia and Arezzo, with a side trip to Orvieto and return. It seemed better, however, on maturer investigation, to include Caprarola and Viterbo in the trip, at a cost of a visit to Spoleto. The route was accordingly modified so as to pass in the following order through Caprarola, Viterbo, Orvieto, Perugia (via Terentola) and Arezzo to Florence. This change was made practicable by the recent completion of the railway line to Viterbo with a short branch to Ronciglione near



¹ Continued from No. 970, page 38.

Caprarola. The following list of monuments may, therefore, be added by way of appendix to those already catalogued for the region between Rome and Florence.

The PALAZZO FARNESE: 1547-1559, by G. B. Vignola for the Cardinal Farnese; a pentagonal fortress-like plan, with fine staircase, circular courts, chapel and frescoes by the Zuccheri and Ant. Tempesta.

Mainly a Gothle city, celebrated for its picturesqueness, its fountains and exterior staircases. The two or three Renaissance monuments of the city are worth a visit.

SANTA MARIA DELLA QUERCIA: by an unknown architect, 1470-1525; with fine simple façade, possibly in part by Bramante; reliefs in lunettes over doors by Andrea (*) della Robbia; fine unfinished columnar portice in front, exact date and author unknown; upper story of cloister attributed to Bramante, perhaps by Ant. da San Gatlo the elder. Fine early Renaissance attar of marble.
 VILLA LANTE (at Bagnala, a suburb of Viterbo): about 1550, by unknown architect; remarkably beautiful gardens with several tountains of unusual beauty and purity of style.
 PALAZZO LANTE (at Bagnala, a suburb of Viterbo): about 1550, with fine but much damaged loggia with rich ceiling and frescoes.
 PALAZZO COMUNALE OF PUBBLICO: of uncertain date, with arcade on ground-floor either of Romanesque construction or rebuilt in fifteenth century with fragments of a Romanesque edifice.
 FOUNTAINS: that in the Market Square is mediaval; that in the court of the PALAZZO PUBBLICO belongs to the Remaissance; and the great fountain in the PIAZZA DELLA ROCCA is attributed to Vignola (1566). IN SAN FRANCESCO several Renaissance Tombs, ALTARS and DOORWAYS: a cardinal's tomb dated 1445; two sixteenth-century altar-pieces in carved stone (one in each transept); in left transept a fine Renaissance doorway and two mural tombs.
 The lists for Orvieto. Perugia and Arezzo have already been given.

The lists for Orvieto, Perugia and Arezzo have already been given. From Florence the route takes the class first to Sienna, which might have been visited from Orvieto, but for the importance of visiting Perugia and Arezzo, on the way to Florence, thus leaving Sienna far aside. From Sienna it is intended to visit in succession, Pisa, Pistoja, Lucca and Prato, except for those who may have already taken in Prato as an excursion from Florence. Subjoined are the lists for these places.

SIENNA (or according to Italian orthography, SIENA).

This city occupies an important place in the history of Renaissance art, both on account of its monuments and its artists. Simone Martino, Lippo Memmi and Taddeo di Bartolo are among the best known names of the period in Italian painting during the fourteenth century, when the Sienese School held closely to its own local traditions. During the Renaissance three Sienese masters are especially famous, one each in sculpture, architecture and painting: Giacopo della Quercia, 1374-1438, contemporary with Brunellesco; Giocanni Antonio Bazzi, known better as "it Sodoma," 1480-1519; and Buldussare Peruzzi, 1481-1537. The fame of Domenico Beccajumi (1486-1551) is of more local limitation than that of the above-named three.

CHURCHES AND RELIGIOUS MONUMENTS. - FIFTEENTH CENTURY.

- IN SAN GIOVANNI IN FONTE (the Baptistery under the Duomo): FONT by Giacopo della Quercia, 1416-1430; with reliefs by Giacopo della Quercia and by Donatello, Ghiberti, Neroccio and Turini.
 OSSERVANZA, monastery: 1432, enlarged 1483, by Cozzarelli (and Peruzzi?).
 CHURCH OF THE CONCEZIONE OF SERVI DI MARIA: begun previous to 1458; façade erroneously a tributed to Peruzzi, antedating his birth by over twenty years; interior completed 1491; dedicated 1533.
 BARTOLI TOMB IN DUOMO: 1460, by Antonio Federighi; (see 5, 6, 8, 11, 14, 20, 25).

- BARTOLI TOMB IN DUOMO: 146, by Antonio Federight; (see 5, 6, 8, 11, 14, 20, 25).
 HOLY WATER BASIN IN DUOMO: 1462, by Antonio Federighi.
 HIGH ALTAR IN DUOMO: bronze canopy by Lorenzo di Pietro ("Vecchietta") 1465-1472; (see references above).
 CHURCH OF FONTEGIUNTA: 1479, by Francesco Fedele; vaulted 1482; north front portal 1489; (see 22).
 PICCOLOMINI TOMB IN DUOMO: 1485, by Antonio Bregno. Figures added later by Torregiano, completed by Michael Angelo.
 SANTA CATERINA: façade 1490, by Corso di Bastiano and Antonio Federighi; (see 28).
 IN SAN DOMENICO, CHAPEL OF ST. CATHERINE: altar decorations in marble, by Giovanni di Stefano (frescoes by Sodoma in sixteenth century); (see 15).

- marble, by Giovanni di Stefano (frescoes by Sodoma in sixteenth century);
 (see 15).

 11. Library of Duomo: 1495; façade in side-aisle of Duomo, 1497, by Lorenzo Marina; frescoes by Pinturichio.

 12. Oratorry of San Bernardino: upper story decorated 1496, by Ventura di Turapilli.

 13. Hospital of Santa Maria Della Scala: coffered ceiling, 1496, by Guidoccio d'Andrea. In the Church, choir-stalls by Ventura di Giuliano; (see 16 and 19).

 14. Capella San Giovanni in Duomo (not to be confounded with chapel underneath); façade about 1497, by Lorenzo Marina.

 15. In Choir of San Domenico: marble tabernacle by Benedetto da Majano; (see 10).

- (8ee 10).
 16. IN VESTIBULE OF LA SCALA, TONDI TOMB: end of fifteenth century, by Cozarelli; (see 13 and 19).
 17. MADONNA DELLA NEVE: end of fifteenth century.

- SIXTEENTH CENTURY.

 18 IN DUOMO, CHOIR-STALLS and INTARSIA-WORK: 1503, by Giovanni da Verona; also by the same, perhaps of earlier date, the inlays of stalls in retro-choir.

 19. IN LA SCALA, ORGAN GALLERY OF CASE: by Giovanni di Pietra Castelnaouo; (see 13 and 16).

 20. IN SACRISTY OF DUOMO, ORGAN-FRONT: by the brothers Barili, 1511. (See 4, 5, 6, 8, 11, 14, 25).

 21. SAN SPIRITO: dome 1508; portal 1519, by Baldassare Peruzzi.

 22. IN FONTEGIUSTA: bronze cidorium, 1517, by Lorenzo Marina; (see 7).

 23. IN SAN FRANCESCO, MARSINI ALTAR and decoration of Piccolomini Chapel: 1517, by Lorenzo Marina; closters, one of the fifteenth century, the other dated 1518.

 24. SAN MARTINO: altar by Lorenzo Marina.

 25. IN DUOMO: HIGH ALTAR and decoration of walls of Choir; 1532, by Baldassare Peruzzi.

 26. SANTA MARTA: FACADE between 15.0 and 1536, by Baldassare Peruzzi.

 27. HAN GIUSEPPE: FACADE between 15.0 and 1536, by Baldassare Peruzzi.

 28. SANTA CATERINA: CHURCH, ORATORY and COURT, by Baldassare Peruzzi.

 39. THE CARMINE: CHURCH and SACRISTY, by Baldassare Peruzzi.

 30. THE CARMINE: CHURCH and SACRISTY, by Baldassare Peruzzi.

 31. IN DUOMO: STAIRS to great pulpit of Niccolo Pisano, 1543, by Bernardino di Giacomo.

 32. IN DUOMO: STAIRED-GLASS in Windows of façade, 1549, by Perino del Vaga.

- 34. IN DUOMO: LECTERN AND STALLS in retro-choir, 1567, by Bartolo Riccio. (See 4, 5, 6, 8, 11, 14, 20, 25 and above.)

 The reference in 18 to intarsia-work in the retro-choir by Giovanni da Verona is to an early portion of the stalls, which was allowed to remain when the work of Riccio was ordered.

 SANTA MARIA DI PROVENZANO: 1534.

LATER CHURCHES AND CHAPELS.

CAPELLA DEL VOTO IN DUOMO: 1661, by Bernini? SAN AGOSTINO: remodelled 1755, by Vanvitelli.

SECULAR ARCHITECTURE. - FIFTEENTH CENTURY.

SECULAR ARCHITECTURE. — FIFTEENTH CENTURY.

FONTE GAJA: originally erected 1343; decorated in 1408 with reliefs by Giacopo della Quercis now in the Opera del Duomo. The present fountain is a modern reproduction of the ancient structure.

IN PALAZZO PUBILICO (a Gothic edifice with Renaissance additions): Sala del Consistoro, Marbile Doorway by Giacopo della Quercia: in upper chapel, CHOIR STALLS by Domenico di Niccola, 1429; IRON GRILLE, 1435-1445; AGROAN-FRONT by Piferio, 1519. In Loggia, FRIEZE by Antonio Pederiphi, 1450-1460. Many inhoro objects of furniture, besides frescoes by Tuddeo di Bartolo, Vecchietta and others.

LOGGIA DEL PAPA: 1460-1463, by Antonio Pederiphi.

PALAZZO DEL GOVERNO: 1469-1530, by Bernardo Rosselino and others.

PALAZZO SYANNOCCHI: 1470, by Francesco di Giorgio (?) or by unknown florentine masters.

PALAZZO DEL TURCO, also known as CAPELLA DEL DILVOLO, by Antonio Pederighi, about 1470.

PALAZZO BANDINI PICCOLOMINI: PALAZZO BANDINI PICCOLOMINI: PALAZZO DELLA CIAJA:

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SIXTEENTH CENTURY.

VILLA MICLI (outside the walls): 1505, built for Sigismund Chigi.
PALAZZO DEL MAGNIFICO: 1508, by Giacomo Cozzarelli, with remarkable bracciali and other ornaments in bronze.
PALAZZO BICHI: 1520.
ARCO DELLE DUE PORTE: cir. 1525-1530, by Baldassare Peruzzi.
VILLA SARACENI: a Gothic edifice with interior remodelled by Baldassare

VILLA SARACENI: a Gothic editice with interior remodelled by Baldassar Peruzzi.

PALAZZO POLLINI OR CELSI: by Baldassare Peruzzi.

PALAZZO MOCENNI: by Baldassare Peruzzi.

FONTE PISPINI: 1534.

VILLA BELCARO: from plans by Baldassare Peruzzi.

VILLA SANTA COLOMBA:
both outside the walls; by Baldassare Peruzzi.

VILLA CELSI:

There appear to be no palaces of importance in Sienna of later date than the middle of the sixteenth century. The fact that at that time (1555, to be exact) Sienna capitulated to the Dukes of Tuscany, losing forever her preëminence and independence, is the probable explanation of this lack of Baroque and Roccoo works. This has preserved to Sienna in a remarkable degree its aspect of antiquity and its strong civic individuality of appearance.

A. D. F. Hamlin.

[To be continued.]

MODERNIZED ROME.

OME is becoming more and more modern every day, as it must with a population of half a million moderne. with a population of half a million moderns within its walls.

But it is not being disfigured. In order to confirm this judgment the writer has made a detailed survey of the entire city, studying particularly those portions of it in the neighborhood of the Quirinal, Viminal and Esquiline hills, in Trastevere, and adjacent to the Corso and the Corso Vittorio Emmanuele, where the building operations of recent years have been most extensive. Not public buildings alone have been observed, but the huge apartment-houses buildings alone have been observed, but the huge apartment-houses and tenements which have especially roused the ire of the sentimentalists. When one of the latter was interrupted the other day in full discourse on the defacing character of these buildings, and requested to analyze the basis of his critical wrath, he was soon driven to admit that he had logically no basis at all. The house at the moment in question was not beautiful, but neither was it ugly. On the contrary, it was designed in an inoffensive style formed to a On the contrary, it was designed in an inoffensive style, formed to a great extent upon the palaces of the Renaissance. Because its designer was evidently not a man of originality, he had produced no new combination of old motives; and because his talents, whatever they were, were small, he had not accomplished particularly interesting proportions. Yet he had revealed most precious qualities. He had good taste, reticence, sobriety and a sound conception of the merits of simplicity. His building was a solid and severely plain work of conscientious, conventional architecture, with windows and doors distributed intelligently: with ornamentation applied most work of conscientious, conventional architecture, with windows and doors distributed intelligently; with ornamentation applied most discreetly, and with the whole finished off by a really attractive cornice. There was nothing in it to offend the eye. Compared with a building of Peruzzi's, it was matter-of-fact and dry, but compared with the average buildings of its own class anywhere else in Europe or in America, it not only held its own, it was superior. It was superior, because it avoided altogether the heaviness which distinguishes much English work, the superficial, thin style so often encountered under the unly mansard roof in France, the cumbrons encountered under the ugly mansard roof in France, the cumbrous, over-decorative manner of the Germans, and the vulgarity which has continued to make so many of our large apartment-houses hideous.

This superiority is claimed not alone for the single example selected for illustration, but for the great mass of modern work in Rome. Not one building can be recalled that falls below a certain excellent standard of simple, refined style; and when the private houses are dismissed and the public edifices approached, it is found that they are equally encouraging. The immense new building of the Banca Romana, on the Via Nazionale, and the large school-building recently erected on the Corso Vittorio Emmanuele, have both been projected on admirable lines of simplicity and repose, and they are quite typical of the kind of work that is done whenever problems of similar nature are presented to the Roman architects. The travertine, stucco and cement variously employed in the construction of both public and private façades present agreeable tones of color to the eye. The stone is of a creamy tint which, as ancient buildings show, grows more beautiful with age. The stucco and cement are treated with coats of brown, tawny-yellow and stone-gray paint, as the case may be. The result, so far as color goes, is often pleasing and always inoffensive. Remembering that the general outlines and details of the buildings are, as has been said, in the same orderly, neutral tone, the reader will perceive that Rome, more than most modern cities, is free from restless, discordant features of architecture. The sky-scraper is as yet unknown, and parti-colored schemes of brick, stone, terra-cotta and painted iron are also in the future.

Some people demur to the Italian custom of disguising the stucco and cement used in some of the buildings by imitation of the texture, cuttings and color of stone. The objection is well grounded. Good architecture is architecture that explains itself — that does not lie. But the main point at issue between the Roman builders and the foreign lover of Rome is that the former are spoiling the ensemble of the city, spoiling the background against which the ancient monuments are set, and there the criticism of the imitative custom falls to the ground. The massive rusticated basement, which is found to be soft and white if you scratch its gray and apparently impenetrable surfaces, may be a sad delusion, but it does nothing, it is certain, to diminish the beauty of the genuine stone wall across the way. There lies the situation in a nutshell. Designing and coloring their buildings in the manner that has been indicated, the contemporary architects of Rome manage somehow to keep well within the limits of the tradition which has made the city what it is to-day in its best preserved parts. It is true that their share in the maintenance of that tradition is largely of a negative character, but that is something. It is something to leave the observer free to make the transition from old to new buildings, and back again, as he walks the streets, without positive shocks to his æsthetic sensibility.

Rome is still, as it has ever been, the one city in the world whose pleasures for the open-eyed pedestrian are unlimited. Palaces dating from the best years of the Renaissance still remain scattered over the city; others that are less remarkable, but hardly less meritorious, on the whole, are simply unnumbered in the records of the city; and there is probably no city of its size and density anywhere which has so many ravishing little gardens, bits of green, with fountains and flowers, that nestle within the very heart of stone walls and ringing pavements. Beneath the writer's window, in a house that would hardly be suspected of it, there plays all day and all night a great splashing fountain, and around it are trees and heavily laden flower-bushes. This scarcely savors of the utilitarian vandalism with which Roman landlords have been loosely charged, as though they were unwilling to leave a foot of Roman soil free from some money-getting construction. The truth is that the Roman land-owner, with all his sins, shows uncommon moderation and sagacity where his American prototype would often spare nothing to bring in rents. The Roman builder has much to learn. The apartments in which seven-eighths of Rome live are never quite perfect. You pay as much as 130 or 150 francs, and even more, for an apartment, and then it is either too big or too small. But that is neither here nor there. The main contention is that the condemnation of the Roman house-builder as a malicious Philistine is unfair and should cease.

People visit Rome once in two years or ten, and when they come the second time they want to find that Rome has stood still. The Tiber provides a most interesting case in point. Loud has been the foreign outery against the new embankment. It was denuding the banks of all their old lazy growths, of all their mossy greens, of all their strange dilapidated charm. Dilapidated fiddlesticks! Is Rome to preserve a source of danger to health and life in order that the occasional tourist may gratify his sense of the picturesque? It would be hard to imagine a sillier demand, and especially in view of the handsome walls which have risen on the sides of the Tiber. The new stone bridges deserve the same commendation. They are stately, dignified monuments open to no adverse criticism. When the Ponte St. Angelo is put in order (as is being done rapidly) the unsightly iron structure now in use will be removed. Flowing at last between banks worthy of its fame and under bridges that cast no fantastic shadows, the river will have in the long run the "entourage" which it deserves. Fancy the Seine and the Thames without their embankments! As great modern cities, Paris and London recognize their obligations toward themselves and keep their possessions in order. For Rome to lag behind would be anything but characteristic of her name. New York was probably more picturesque as it emerged upon the vision of the first incoming sailors than it is now; but should that have deterred the municipality from strengthening the Battery with stone? Some humorist of the sentimental sort might as well ask that all dock improvements should cease, in order that visitors from Europe may see what America can do in the way of artistic dilapidation along her principal water-front.

The failure of Prince Borghese and the subsequent administration of his estate by the Government have wrought some really unhappy changes. In the Villa Borghese bicycle races are run, there is a

café, and on Sundays the lower classes invade the place, leaving shabbiness in their path. The quiet, well-kept beauty of the place is gone. It is unkempt and unlovely. On the Pincio an elevator has been introduced. It conveys passengers up beside the Scala di Spagna and its supports look grotesque enough, thrust out within a stone's throw of the obelisk. It would be futile to deny that Rome has lost and is losing elements of her grandeur. She has been losing them ever since she began to have a history. But they are inexhaustible. The recuperative power of the great mother of nations is boundless; she shows at this moment no signs of approaching decay, and the hysterical solicitude of those of her admirers who forget these facts need awaken no material apprehensions. — N. Y. Tribune.



AMERICAN INSTITUTE OF ARCHITECTS.

MEETING of the Executive Committee of the American Institute of Architects was held in the Institute rooms and those of the New York Chapter, on Monday, August 13, at 3.30 p. m. In the absence of the President, Mr. D. H. Burnham, Mr. Edward H. Kendall was elected Chairman and the reading of the records of the last meeting was dispensed with.

The Secretary reported that he had received applications for charters from the Southern California, Washington State and Brooklyn Chapters, each of which had submitted a copy of its Constitution and By-laws, all of which were approved and charters granted.

As a result of the last letter-ballot, the following were declared elected Fellows of the American Institute of Architects: William G. Malcomson and William E. Higginbotham, Detroit, Mich.; William Warren Sabin, Cleveland, Ohio.

William Warren Sabin, Cleveland, Ohio.

The following persons having made application in due form, endorsed by the officers of their several Chapters, were provisionally accepted as Fellows: John Ludwig Wees, Joseph Paul Annan, Louis Mullgardt, Craig McClure, Alexander M. Stewart, William Henry Foster, Alfred M. Baker, Frederick Widmann, Caspar Dethard Boisselier, Robert William Walsh and Edmund A. Manny, St. Louis, Mo.; Edwin S. Radcliffe, Duluth, Minn.; Charles T. Mott, Brooklyn, N. Y.; D. C. Ernest Laüb, New York, N. Y.; George L. Morse, Brooklyn, N. Y.

The Secretary was directed to issue a letter-ballot with a slight

The Secretary was directed to issue a letter-ballot with a slight variation in its form to enable the use of the Australian system of voting.

The Secretary was directed to submit to the next meeting of the

Board of Directors a form for Chapter reports.

The report of the committee to consider the relations of the

The report of the committee to consider the relations of the Chapters to the Institute was received with suggestions as to amendments to the Constitution and By-laws, and the Secretary was directed to issue a letter-ballot on the former and print the latter and send it to the Fellows of the American Institute of Architects not less than thirty days before the next annual convention.

Circular of Information No. 1, with reference to the next annual convention to be held in New York, October 15, 16 and 17, was submitted and order of proceedings discussed.

submitted and order of proceedings discussed.

The progress of the Bill to regulate the designing of Government buildings and the status of the claim of the heirs of the late Thomas U. Walter, LL. D., were reported upon.

Adjourned. ALFRED STONE, Secretary American Institute of Architects.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

DETAILS OF THE CITY-HALL, PATERSON, N. J. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.: FOUR PAGES.

[Issued with the International and Imperial Editions only.]

PERHAPS the most useful and interesting illustrations that an architectural journal can publish, are really good detail drawings and though these are but fragments of a deserving whole, we believe our readers will examine them with satisfaction.

THE HARRISON OFFICE-BUILDING, PHILADELPHIA, PA. MESSRS COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA, PA.

The building is to be twelve stories high, the style of architecture being the French Renaissance of the period of Francis I. The basement, with concrete foundations, will be twenty-one feet deep, and will extend under the sidewalks. It will be divided into two stories, the lower one for machinery, dynamos, etc., and the rear one

or boilers, coal, etc. The twelve stories above ground are to be arranged to be divided into offices to suit tenants, and will be reached by three high-speed elevators. The offices will be abundantly lighted from all sides of the building, the number of windows

exceeding four hundred, all of plate-glass.

The structure is to be fireproof, and will be what is termed a steel-frame building. The steel skeleton of columns and beams will start at the bottom of the cellar, and will be anchored down and thoroughly braced its entire height against wind-pressure. Every steel member of this skeleton will be encased in terra-cotta, and the outside walls on all sides will be entirely of large blocks of terra-cotta of the full thickness of the wall. In this last respect, it is said, the structure will be the first of its kind, terra-cotta for outside walls having hitherto been used only as a trimming or facing for brick. The terra-cotta will be of a light buff-gray color.

With the exception of the entrances and second story, which are

richly ornamented, the façade is to be plain and massive up to the overhanging balcony at the tenth floor. The whole building is to be

overnanging balcony at the tenth noor. The whole building is to be crowned by a steep roof of light green slate, and surmounted by two great chimneys and high, copper finials.

The building is forty feet front on Market Street and one hundred eighteen feet on Fifteenth Street, and is just one hundred fifty feet high from the pavement to the roof ridge.

Two things, the architects say, are unique in the design—first, the whole building, being high and narrow, has been given a very slight entasis. The other novelty in high building in Philadelphia will be the treatment of the wall adjoining the neighboring property to the westward. This façade will be of the same material, and is as carefully designed as the others, though simpler.

THE IMPERIAL APARTMENTS, MINNEAPOLIS, MINN. MR. H. W. JONES, ARCHITECT, MINNEAPOLIS, MINN.

HOUSE FOR SMITH COLLEGE, NORTHAMPTON, MASS. MR. W. C. BROCKLESBY, ARCHITECT, HARTFORD, CONN.

DINING-ROOM IN THE HOUSE OF J. H. GIBBS, ESQ., BROOKLINE, MASS. MR. EUGENE L. CLARK, ARCHITECT, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

THE FLORIDA STATE BUILDING, WORLD'S COLUMBIAN EXHIBI-TION, CHICAGO, ILL.

[Gelatine Print.]

FLORIDA was one of the few States which carried out the suggestion that each State should provide a building typical of and peculiar to itself, by providing for her citizens a reproduction of the old fort at St. Augustine.

COMPETITIVE DESIGN FOR A WATER-TOWER AT HALLE, PRUSSIA HERREN VON KNOCH & KALLMEYER, ARCHITECTS.

THIS plate is copied from Architektonische Rundschau.

"LA MUSE DE LA SOURCE." M. JEAN HAYNES, SCULPTOR.

THIS and the companion illustration, which were exhibited at the last Salon, are copied from the Builder.

"LES ADIEUX D'UNE HIRONDELLE." M. FÉLIX CHARPENTIER, SCULPTOR.

"WHEATFIELD LODGE": THE DINING-ROOM, HEADINGLEY, YORKS, ENG. MR. T. BUTLER WILSON, ARCHITECT.

"WHEATFIELD LODGE": THE STAIRCASE, HEADINGLEY, YORKS, ENG. MR. T. BUTLER WILSON, ARCHITECT.



BOSTON, MASS. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts. CINCINNATI, O. - Special Exhibition of Paintings: at the Art Museum, during September.

NEW YORK, N. Y.—Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.



EXPERIMENTAL CREMATION OF GARBAGE IN CHICAGO — A crematory company on Webster Avenue, Chicago, called the Anderson Pressed Brick Co., asked the city department about three weeks ago to haul to their works all the refuse they could find for a week. This was done. It arrived by the wagon-load, over 3,000 tons per day. Cars containing twenty tons each of this cholera-mixture were drawn by cable into the Company's two tunnels, where, after two-and-a-half hours, the cars were drawn out. One car would have carried with ease the pure white ashes that were left upon the entire train. The shoes and nails of the dead horses and pieces of scrap iron were invisible. Everything had been reduced to fine white ashes, and this without the smallest offensive odor. The process is simple. Two firebrick tunnels, twenty fireproof flat cars and a heat such as his Satanic majesty would turn green with envy, could he witness it, are all that is required. Fast as one car is drawn from the tunnel and swept by an automatic process of what little hot ashes remain, it is shifted to the second tunnel, loaded by means of a chute with garbage, drawn into this tunnel and the cremation begins. These two trains go in opposite directions, so there are always two cars being loaded and unloaded at the same time, one at either end. A peculiar condition that the spectator witnesses is the uncoupling of the cars; they are never hot. A workman, in fact, can crawl through the tunnel under the cars easily, where the heat is never over seventy degrees, while on top of the cars where the garbage is, it is over 3,000 degrees. When the car newly-loaded is drawn into the tunnel it encounters a heat of 212 degrees. Here it undergoes a drying-process, and the gases generated are by suction drawn through the tunnel to its centre. There they encounter an intense heat, and are consumed and made to increase the fire that burns them. As the car is slowly drawn through the tunnel, where the walls are at a white heat, the garbage is thoroughly dried and comes in conta EXPERIMENTAL CREMATION OF GARRAGE IN CHICAGO

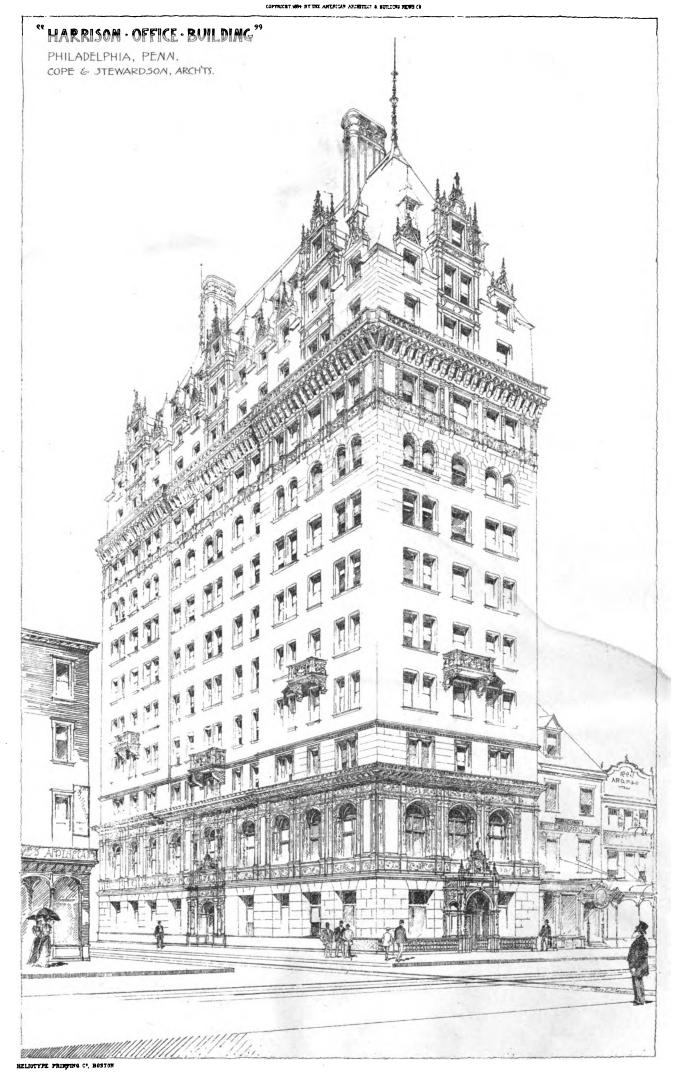
The Bells of Saint Michael's, Coventry.—The history of church-bells presents many remarkable incidents, and the parish of St. Michael's, Coventry, has added another which appears to be unique. As has happened elsewhere, the bells caused strains which the tall steeple could not resist, and in consequence there was a costly restoration. During the operations the bells were removed, and there were apprehensions that if they were allowed to swing uproarious as of yore another restoration would be inevitable. As Cowper says, there is in souls a sympathy with sounds, and some of the parishioners appeared to be afraid they would cease to be devotional unless they were called to prayer regularly by the old chimes. Accordingly, it was resolved to erect a lofty campanile in order to provide for the bells. Some of the promoters of the restoration were dissatisfied because the scheme had assumed a new character, and withdrew their support. But, on the other hand, promises were made which denoted remarkable munificence. One gentleman, the late Mr. Woodcock, appeared prepared to pay a sum which is described as varying from 5,000%. to 35,000%. His death caused the collapse of the campanile project. The bells are still on the ground, affording amusement to young campanologists, who are able to kick occasional sounds out of them, and there is no money to raise them to their old position. Mr. J. O. Scott, who had charge of the restoration, considers that, while it would be very unwise to ring the bells in the steeple, there is no danger in chiming, and with that opinion. restoration, considers that, while it would be very unwise to ring the bells in the steeple, there is no danger in chiming, and with that opinion Messrs. Taylor agree. The simplest course, under the circumstances, would be to subscribe the two hundred pounds which are required for the rehanging, and for an important parish like St. Michael's, that end ought to be soon attained. But, strange to say, some of the parishioners have a hankering after the campanile, while others profess to care little for bells that are not in full swing. — The Architect.

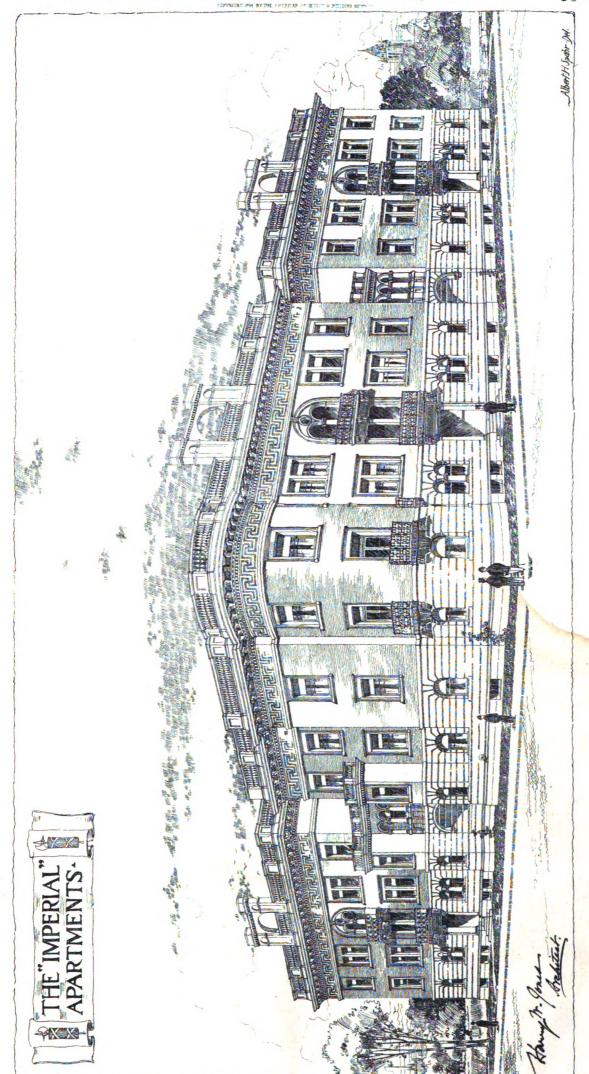
Death Duties and Art Prices. —The sale of the portrait of Lady Betty Delmé by Sir Joshua Reynolds, for which there were biddings up to 11,000 guineas at Christie's recently, raises some interesting questions in connection with the death duties. The portrait was bequeathed, with the other family portraits, to Mr. Emilius Charles Delmé Radclyffe by his uncle, Mr. Seymour Robert Delmé, lord of the manors of Cams Oysell and Titchfield, Hants, who died in March last, leaving personal estate which was valued for probate at £40,191. In this valuation it is hardly likely that more than £1,000 was put upon the picture for which such an extraordinary price was bid, and it is probable that the Somerset House authorities will now, in this instance, claim probate and estate and legacy duty on the balance. It is not often that any claim of this kind is made, although the difference between the valuation for probate and the selling-price, not only of works of art and household effects, but of leasehold properties and shares in adventures for which no stock-exchange quotations are obtainable, is sometimes great. The contents of a mansion were valued for probate at less than £2,000, and a small part of them were sold not long since for more than £20,000. For the leasehold interest in a suburban house and its grounds, valued at £5,000 for probate, an offer of £7,500 was refused. Shares in unprosperous speculative companies valued at a shilling or sixpence each, or at nil, occasionally find buyers after negotiation at 5s. or 7s. 6d. each. If the inland revenue authorities had the power to take over any properties they chose at the probate valuation, plus, say, 10 or 15 or even 20 per cent, they could often make a handsome profit on the resale. — Westminster Gazette. DEATH DUTIES AND ART PRICES. - The sale of the portrait of Lady

S. J. PARKHILL & Co., Printers, Boston, U. S. A.

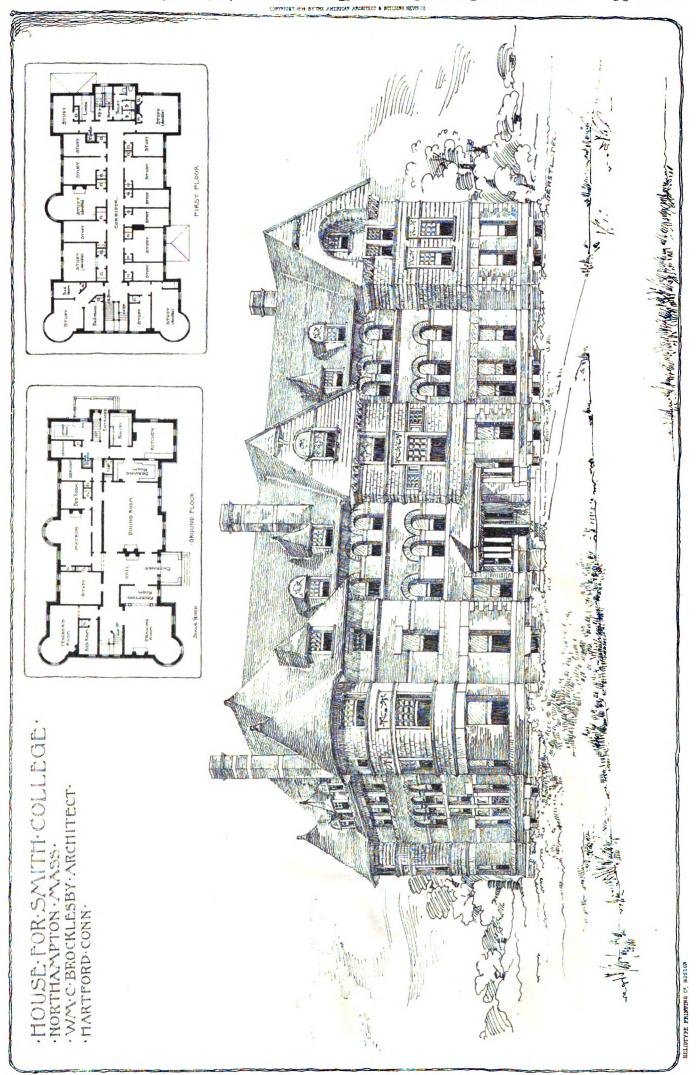


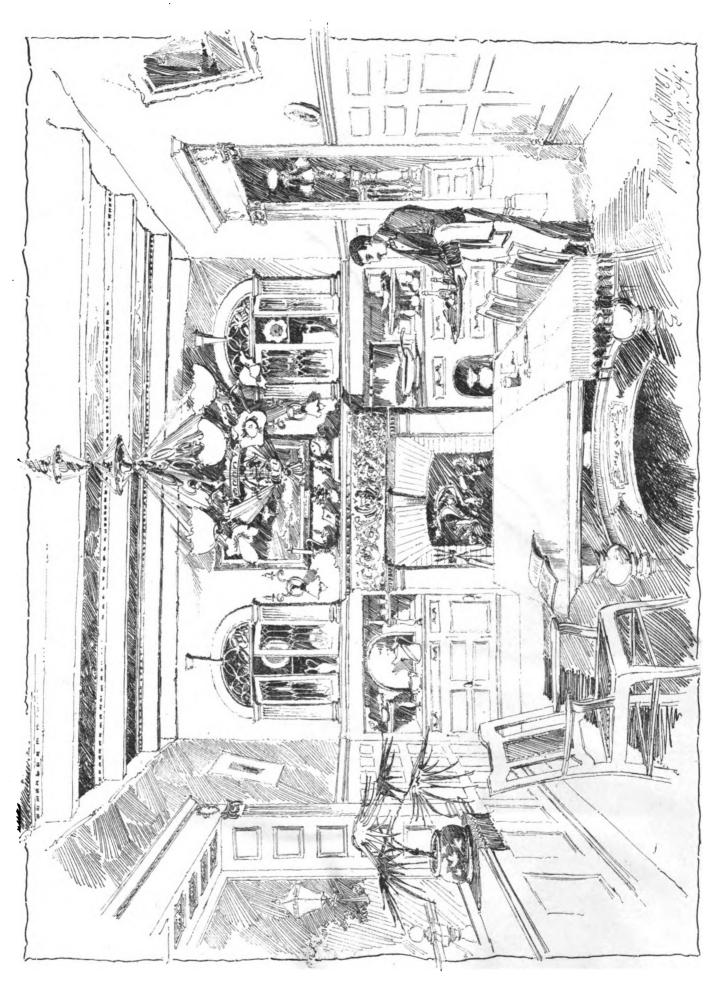
PO. 975. MERIGAN ARCHITECT AND BUILDING NEWS. SEPT. 1. 1594.





MELIOTYPE PRINTING C. BOSTO





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SEPTEMBER 8, 1894.



The Efficacy of Microbes in the Purification of Sewage—
The Legality of the Corporate Ownership of the High Buildings in Chicago. — Death of A. B. Cross, Architect. — Death of Dr. Arnold Bürkli-Zeigler, Engineer. — Brick-protected Iron vs. Wood for Fire Resistance. — The Rotation of Crops. — Plants as Restorers of Nitrogen to the Soil. — Experiments in Support of the Supposition. — The Competition for the Paris Fair Buildings of 1900. — The New Architect of the Louve.

USTRATIONS: —
Entrance to the Starkweather House, Pawtucket, R. I.—
House at Cambridge, Mass.—Stable at Warwick, N. Y.
— Competitive Design for the Y. M. C. A. Building, Troy,
N. Y.— Central Falls School, Great Falls, Montana.— Competitive Design for an Ohio Church.—Competitive Design for
the Lithgow Public Library, Augusta, Me.

Additional: Entrance Rotunda of the Agriculture Building,
World's Columbian Exhibition, Chicago, Ill.—West Front
of the Electricity Building and North Front of the Administration Building, World's Columbian Exhibition, Chicago,
Ill.—

EMUNICATION:—

The Decay of Spruce Beams in Brick Walls. . .

THE remarkable experiments carried out two or three years ago by the Massachusetts State Board of Health, which resulted not only in identifying, in the most satisfactory manner, the microbe of nitrification, whose existence was not even dreamed of fifteen years ago, but in collecting a great deal of information in regard to its habits, has already borne fruit. Some months ago, Mr. Sidney Lowcock, of Birming-ham, read before the Euglish Institute of Civil Engineers an interesting paper, describing the application by him of the results of the Massachusetts experiments to the purification of sewage. It was ascertained by the Massachusetts Board that the nitrifying microbe, contrary to the ordinary idea, does not live exclusively in loam, but prefers to cluster on particles of gravel, the gelatinous masses which it forms rapidly spreading over the surfaces of the particles, after a colony has once been established. In pursuance, apparently, of this idea, Mr. Lowcock arranged a sand and pebble filter, with air-pipes laid among the pebbles, so that air could be blown through them. By supplying oxygen in this way, the pebbles, after a colony of bacteria had established itself, soon became covered with them, and the efficiency of so large a number, in purifying water charged with nitrogenous matter, was very great. all sewage contains isolated specimens of the microbe, all that was necessary was to allow sewage to run through the filter. At first, it ran through unchanged, but with the lodgment and multiplication of the wonderful little creatures, it became purer, until, in about a month, the pebbles became completely covered, and the purifying power was at its height. When this point was reached, Mr. Lowcock found that three hundred and fifty thousand gallons of city sewage per day could be treated on an acre of land, and that the effluent would be practically pure. This extraordinary efficiency, it is obvious, would make it easy for inland towns to secure purification by filtration, without the serious outlay for filtration-beds and service which has hitherto been necessary, and it is to be hoped that the knowledge of the new system may be disseminated as rapidly and as widely as possible.

THE new Attorney-General of Illinois has already acquired fame for his zeel in averbanding fame for his zeal in overhauling people who ignore or evade the laws; and, among other things, he has turned his inquiring eyes upon the high buildings in Chicago. It seems that a large part of these are owned by corporations which, as he thinks, have no right to hold such property. In Illinois, as elsewhere, the statutes forbid corporations from

dealing in real-estate, the law looking with disfavor on the accumulation of lauded property in corporate hands. Nevertheless, corporations formed for the purpose of carrying on other business are allowed to hold such real-estate as may be necessary for their business; and it is said that the companies which own the "sky-scrapers" have taken advantage of the statute provision permitting the erection by corporations of buildings "devoted to the arts," or to be used for safe-deposit purposes, to construct enormous blocks, in some portion of which is to be found an opera-house, or a concert-hall, or a safe-deposit vault of some sort, while the rest is devoted to offices, which are rented, the rents furnishing funds to pay interest on a large capitalization in stock and bonds. Although, strictly, there seems to have been some evasion of the law, it is a very innocent one, as the buildings do no one any harm, and, without the help of the concentrated capital of a corporation, they could hardly have been built. The investigation has, however, brought out the curious fact that a considerable proportion of these huge structures are on leased land. The practice of ground-renting land, singularly enough, appears to be more general in the West than in the East, but, independent of the other disadvantages of building on leased ground, it is notorious that buildings held on such tenure are not usually constructed in such a way as to leave much of value for the owner of the soil when the term of the lease expires; and the "sky-scrapers," of all buildings, ought to be most solidly designed.

R. A. B. CROSS, one of the oldest architects in the West, died a few days ago in Kansas City. Mr. Cross was born in New Jersey, but settled in St. Louis nearly fifty years ago, and was for a time associated with Mr. Thomas Walsh. Afterward, he went to St. Paul, but soon returned to Missouri, and, after a short stay in St. Louis, came to Kansas City. Here he had lived for thirty-six years, during which the town had grown from an insignificant settlement to a great city. He was much employed, on important work, and was for many years conspicuous in the profession in the West.

HE death of Dr. Arnold Bürkli-Zeigler, one of the greatest engineers in Switzerland should be a should engineers in Switzerland, should not pass unnoticed, especially as the deceased was closely connected with architects, and for many years held an important place in the direction of the Schweizerische Bauzeitung, one of the best of the Continental architectural periodicals. Arnold Bürkil was born in Zurich in 1833, and had almost always lived in that beautiful city, for which, through the systems of watersupply and drainage which he devised and carried out, and the water-front park, which was also designed and carried into execution by him, he did perhaps more than any other citizen had ever done. Bürkli studied his profession in his native city, and, at the age of nineteen, entered the service of the Cantonal department of highway and hydraulic engineering; but, a year later, he took a position as engineer on the new Zurich-Winterthur railway. After the conclusion of his work on the railway, he went to Berlin, where he spent a year and a half in the Bauakademie, or Building School; and then took a tour of study and investigations through Belgium, England and France. In 1860, he was appointed chief of the City Department of Roads and Bridges, and retained that post to the end of his life. His activity and knowledge made him prominent among professional men, not only in Switzerland, but, to a certain extent, throughout the civilized world. He was for sixteen ears President of the Swiss Society of Engineers and Architects, and prominent in other professional associations.

T is curious to find that the question of the value of slowburning wooden construction in comparison with construction of properly protected iron has assumed serious proportions in Germany, as with us. It will be remembered that some months ago, the great "Hansa House," in Antwerp, a structure dating from the middle of the sixteenth century, was burned, with a loss of nearly a million dollars. Professor Max Möller, of the Technical High School at Brunswick, recently visited the ruins, which are not yet cleared away, and writes to the Deutsche Bauzeitung his observations. In the court-yards of the great building were erected, some nine years ago, immense "silos," or tanks, of iron plates riveted together like huge boilers, and intended to hold grain. Although surrounded by a vast mass of blazing wooden flooring, these silos resisted the fire very well, and still stand like towers among the ruins, only the upper plates being wrinkled by the heat. As might be expected, however, the grain stored in them was completely ruined, first by roasting, and then by soaking with water; and Professor Möller says that if they had been surrounded with a protecting brick wall, they would probably not only have escaped injury themselves, but would have preserved their contents uninjured. In giving his reasons for this conclusion, and remarking that many warehouses are now in process of erection in the various German and Dutch ports, in which vast quantities of valuable goods will be stored, he observes that the fire-insurance companies stand in the way of improvement in their construction, by condemning indiscriminately all iron structural work, and advocating the use of wood alone for timbering and flooring, without trying to ascertain the reasons why the earlier iron buildings have failed to resist fire. The consequence of this is, as he says, that only half measures are taken in warehouse construction, instead of adopting boldly the system now recognized as the best and most efficient of all, consisting in the protection of all structural ironwork, and the shutting-off of each story from the rest by waterproof and fireproof floors, and smokeproof doors between it and the enclosed staircase.

OME of the most extraordinary agricultural experiments ever undertaken, considered both practically and scientifically, are described in Le Génie Civil. Every one who has ever owned a lawn knows that to plough the ground at intervals, and raise a crop of certain vegetables, improves the subsequent growth of grass; and a drive through the suburbs of any large city will show lawns undergoing this treatment, sometimes with a crop of potatoes, sometimes with beans, according to the notions of the owners, or their gardeners. process by which this alternation of crops improves the soil has never been very clearly explained. Most people suppose that the repeated digging up of the earth, to plant the potatoes, and harvest the crop, is the secret of the success of the treatment, but chemists have fancied for many years that, in such rotations of crops, one set of plants might have the power of absorbing nitrogen from the atmosphere, and conveying it to the soil. With this idea, a long series of experiments was carried out, fifty years ago, by the greatest chemists in Europe, who analyzed various plants, the air in which they grew, and the soil, before they were planted, during their growth, and afterwards, and came to the unanimous conclusion that the absorption and storage of nitrogen by growing plants was an impossibility.

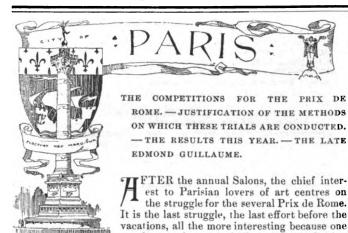
ROR all this, farmers continued to observe that certain plants, particularly of the leguminous tribe, such as clover, lucerne, sainfoin, and some others, instead of exhausting the soil, seemed to enrich it, so that, even after the leaves and stems had been cut and carried away, the roots alone, left in the ground, sensibly increased its fertility. Analysis showed that these roots contained a considerable quantity of nitrogen. If, according to Boussingault, Lawes, Gilbert and others, it was impossible that this nitrogen should be derived from the atmosphere, it must be drawn from nitrogenous matters in the soil. The inference would be, in this case, that nitrogenous manures would be beneficial to crops requiring so much nitrogen for their growth; yet it is well known to farmers that these plants not only derive no benefit from nitrogenous fertilizers, but are injured by them, while, although, through the nitrogen contained in their roots, they improve the soil greatly for succeeding crops of other plants, they injure it for themselves; and leguminous crops, cultivated too long in the same ground, become sickly. It was not until a few years ago that science and observation were reconciled, by the persistent investiga-tions of MM. Hellriegel and Willfarth, who demonstrated beyond question the fact that the leguminosæ do, in growing, absorb large quantities of nitrogen from the air, but with the singular condition, that the absorption of nitrogen begins only with the appearance of a diseased state, which is marked by the development of tubercles, about the size of a millet-seed, on the roots, and is, apparently, caused by minute animals, which are always found in the tubercles, and seem to give the plant the nitrogen-absorbing power. Further investigations showed that the young, healthy plants lived on the nitrogen already contained in the soil, and that it was not until this was

exhausted, and the plants began to suffer, that the nitrogenabsorbing excrescences made their appearance; and proved, also, that the tiny inhabitants of the tubercles were, as a rule, confined to one species of plant, the acacia microbe, for example, refusing to live on the bean, or the clover microbe on the lentil.

T is evident that a plant capable of absorbing nitrogen, which is a costly, as well as indispensable adjunct to farming, and of storing it up in the soil for its master's profit, is a valuable possession; and, as only diseased plants have that property, it is obvious that it is desirable to spread the nitrogenstoring disease. With this view, several skilful farmers in France and Germany have, within the past two or three years, been trying experiments, by "vaccinating," as they say, fields of leguminous plants, by sprinkling them with earth in which tuberculous plants have been growing, or water in which they have been soaked; and the results have been extraordinary. Analysis has shown that a single crop of tuberculous leguminosæ, if the tops are ploughed in, adds to the soil from five to twelve thousand pounds of nitrogen, worth from eighteen to forty-five dollars, to the acre; and even when the tops are cut and carried away, there is enough nitrogen left in the roots to ensure a good crop of cereals on the same ground the next season, without other fertilizer. In 1890, a tract of old, peaty soil was "vaccinated" with a ton and a half to the acre of earth from a diseased field. Besides this, five hundred and twenty pounds to the acre of scorize from a dephosphorating furnace were spread over the ground, and about a thousand pounds to the acre of kainite, but very little nitrogenous manure. The tract was then sown with clover, which produced nearly three tons of hay to the acre. The next year, a virgin peaty soil was treated with half a ton to the acre of sand, from a field which had borne a crop of "serradelle," a small leguminous plant, unknown to us. This sand was harrowed in. No other manure of any kind was put on. The ground was sown with winter rye. In May, thirty-five pounds to the acre of serradelle seed was sown among the rye. The rye produced a good crop, and, after the harvest, the serradelle, which had absorbed and fixed about sixty pounds to the acre of atmospheric nitrogen, was ploughed in, as green manure. The next year, the land was planted with potatoes, and similar potatoes were planted in neighboring fields, which had not had the new treatment, but were simply enriched with barn-yard manure. At the harvest, the yield from the vaccinated fields, which had received no other manure, was from twenty-eight to sixty-two per cent greater than from the manured fields, according to the variety planted. The most surprising result from the treatment appears, however, to have been obtained in Prussia, where a tract newly brought under cultivation was divided, and part vaccinated with earth from a lupin field. The whole was then sown with lupins; and the yield from the vaccinated portion was five and one-half times as great as that from the other portion, for equal areas.

HE programme of competition for designs for the buildings for the Paris Exhibition of 1900 has been issued. The competition is restricted to French architects, and the designs must be submitted by December 15, next. The programme gives the surface to be covered to accommodate the different groups of objects exhibited, the whole amounting to three hundred and ninety-two square metres, or about one hundred acres. Of the eighteen groups into which the exhibition is to be divided, the largest is that of "works of art," which will, according to the programme, require fifty thousand square metres, or about thirteen acres. Threads and Fabrics come next, with fifty-five thousand; and Civil Engineering third, with forty-four thousand. Instruments and Processes of Science and Art, and Mechanical Processes and Material, have two separate buildings, aggregating only forty-nine thousand square metres, which seems small in comparison with the mighty Liberal Arts Building at Chicago. The subsidiary buildings, of which there will probably be a large number, are not included in the list.

T is interesting to learn that the place of M. Edmond Guillaume, as architect to the Palaces of the Louvre and the Tuileries, has been filled by the appointment of M. Paul Blondel. M. Blondel, it is hardly necessary to say, was a winner of the Prize of Rome, and, as such, entitled, by French usage, to the first right to Government appointments of the sort.



wonders each year whether any one having real talent is to be thus discovered. But each year, or nearly so, there is found only the same sort of good work that shows that the pupil has profited by his master's lessons, but discloses never a glimmer of true originality. And because of this, numerous critics are prolific of lamentation, and profit by the occasion to demonstrate once more the absolute inutility of the École des Beaux-Arts and, even, its baneful influence. Besting their case on what they are pleased to call the results, they accuse it of not giving any real freedom to the natural inclinations of the artists, of hampering their struggle after the new and unpublished, of drawing them always by well-trodden paths—over the sacred road of academic routine. And, very naively, they cite in support of their contention the names of certain modern artists who have known how to free themselves from the formulas of the School, and have been obliged to forget the instruction they had received and the methods they had learned before they could recover their own personality, and give free rein to their imagination, or pursue their own manner of interpreting nature.

Is this method of judging or, rather, of condemning the École des Beaux-Arts a just one? We answer yes, if at the École one is taught a trade. We answer no, if one there learns the elements and the bases of an art to which one can later give a personal imprint only by using these basic elements in a special and personal manner. But the elements themselves are immutable. Before one can read he has to learn the alphabet, before he can write he must know his letters and the value and significance of words, and be exercised in the use of phrases. Later, with the words, and be exercised in the use of phrases. Later, with the same words, with the same tongue, which are so expressionless when used by an ordinary man, the real artist evokes personal sensations; he becomes a literateur, poet, orator. It is not the School that makes the artist, it but gives him the means of becoming one. It gives him the instrument; he has to apply the mechanism; he has to draw from it the sounds and produce the impressions.

The Ecole des Beaux-Arts furnishes the instrument, the mechanical and scientific side of the art. And in spite of all the new and subtile theories of the specially reformers, the practical side cannot

ical and scientific side of the art. And in spite of all the new and subtile theories of the so-called reformers, the practical side cannot be neglected. Drawing is the base of both painting and sculpture; it is, according to the expressive saying of Ingres, "la probité de l'art." Well, at the School one learns, or ought to learn, to draw. Drawing is the instrument, color is the expression, and by color there is no need to understand red, green, yellow, blue, etc., a charcoal drawing has "color" when it is the work of an artist. I feel, then, that the real need is to ask these scholars who are leaving the École des Beaux-Arts to prove that they know how to use the instrument with which they have been furnished, that they know how to draw a nude male or female figure without anatomical fault: the instrument with which they have been furnished, that they know how to draw a nude male or female figure without anatomical fault: that is the main thing. The matter of "movement" has its importance; the matter of "expression" is, for the moment, quite a secondary affair. It will come later, it must come, if one is to be truly an artist, but it is not necessary that it should show itself quite so soon. Unless it is innate, when it is the possession of genius, personal expression is formed little by little, by observation, by thinking, by the study of life in its joys and in its griefs. Can one properly demand that an artist as he leaves the School should show the full measure of his talent? He would then have nothing more to learn, and, in that case, art would be a mere trade. The fact is quite otherwise. The way opens before him, unknown to us the public, foreseen only dimly by him. Most often he discovers the right path only after many experiments, many blunders, many struggles. path only after many experiments, many blunders, many struggles. In such event the School teaching seems, to superficial observers, to have been forgotten or even despised because all trace of it seems to have been lost. But it is there, all the same, at the foundation of his efforts; it has been the point of departure, far removed it may be, but from which the start must be made. Beneath the decorative treatment, attractive because of its lightness and apparent simplification, one can still discern the scrupulously-exact draughtsmanship which forms the indispensable point of departure. This is the reason why the programmes for the Prix de Rome are drawn from Classic and Ancient History.

I do not defend the practice which its detractors consider a mere matter of routine. I merely explain it, and I really believe it has not the serious defects that are ascribed to it. It is asserted that

the imagination of the competitors is not stimulated, while the interpretation of human feelings is often made unduly difficult. These programmes are called "cold," and I feel that they are. But the real question is to decide whether it is really useful to excite the imagination of the contestants. One does not seek to stimulate an artist's imagination; it creates its own excitement. It may be excited, it is true, but involuntarily — by a word or a suggestion of ours, which the artist seizes on without stopping to ask our leave. A programme may inspire the artist's feelings, but it may inspire it contested the principal subject dynamidal and if this recordery. quite outside the principal subject demanded, and if this secondary inspiration is worth more than that indicated by the programme itself, the artist will find himself placed hors concours, in spite of its good qualities. This would be an injustice from the point-of-view of sheer art, and this is why the competition for the Prix de Rome, which is really a school competition, had logically to be judged accord-

ing to the school standard in drawing, modelling and movement.

The subject of the competition in painting this year was "Judith presenting the head of Holoiernes to the inhabitants of Bethulia." It is a fine programme when considered from the standpoint I have indicated. To demand that a pupil graduating from the Ecole should express the sentiments that agitate the bosom of Judith would be audacity itself; but to require him to show this subject in a painting well-drawn, the figure clad in raiment which the epoch allows to be

drawn, the figure clad in raiment which the epoch allows to be reduced to the least possible quantity, so that the anatomy of the figures can be well shown, is to allow him to prove his talent for composition and the mise en scène, and is entirely proper.

The competitors this year clearly proved that this was all that could be expected from them. They have enabled the jury and the public to foresee that here were men likely to become real artists without affording them the possibility of giving their definite names.

The First Prize was won by M. Leroux, a pupil of Bonnat, and the Second First Grand Prize was carried off by M. Dechenaud, pupil of MM. Boulanger, Lefebvre and Benjamin Constant, and next in of MM. Boulanger, Lefebvre and Benjamin Constant, and next in rank came M. Laparra, pupil of Boulanger and Robert Fleury, and M. Benner, pupil of Jules Lefebvre, Benjamin Constant, Henner and Robert Fleury.

The competition in sculpture equally supported the arguments I have advanced. Here, too, the competitors showed the good qualities of pupils — a great accuracy in the method of holding the modelling-tool, and a real knowledge of the muscles of the human body, but in all cases there was a lack of sentiment and expression. They were given for their subject "Achilles, inflamed with anger at the death of Patroclus, begins to put on the armor which his mother, Thetis, brings him."

This programme, too, lends itself to a fine movement of anger and does not preclude a certain air of grandeur. The danger in it, and it is one which most of the aspirants have not known how to avoid, is the temptation it offers for exaggerating the movement, and avoid, is the temptation it offers for exaggerating the movement, and representing Achilles in the guise of a demoniac, or one disguised in liquor, well-built, of course. The First Grand Prize, M. Roux, pupil of Cavelier and Barrias, exhibited individual qualities. The other prizes were obtained by M. Champeil, pupil of Thomas and Gauthier and by M. Boucher, pupil of Falguière and Mercié.

With architecture, it is not the same as with painting and sculpture: it is a more positive art and one forced to conform itself to practical prigraphics, and hofore which fancy and imagination must be at The

exigencies, one before which fancy and imagination must bow. architect, in place of learning first of all his trade, like the painter, pursues at the École studies which develop his taste and imaginaoffsprings of his imagination. Hence, they give to the architectural competitors for the Prix de Rome programmes for grand works in which they can give free rein to their artistic temperament without having to concern themselves with anything else than composition. The matter of cost does not concern them at all, and the necessities of construction are often treated in the most cavalier fashion. must, nevertheless, be acknowledged that for some time past the programmes have been growing more and more modern. The one this year was a "Central School of Art and Manufacture" which had to provide two great divisions: that for the sciences subdivided into three sections corresponding to the three years of the curriculum, while the other division provided for a military school with its

gymnasium, riding-school, parade ground, etc.

Almost all the competitors arranged the three sections of the division of Arts and Sciences about three sides of the grand central division of Arts and Sciences about three sides of the grand central court, and provided at the rear the space and buildings needed for military exercise. The First Grand Prize was carried off by M. Recoura, pupil of Pascal, the second by M. Patouillard, pupil of Ginain, and the third by M. Hérand, pupil of Raulin.

A former Grand Prix de Rome, M. Edmond Guillaume, died recently, in July. He was born in 1826, and entered the École des Beaux-Arts in 1845, in the atelier Lebas, obtaining, in 1855, the

Second Grand Prize with his scheme for a conservatory of a and declamation. In the following year, he secured the Grand Prize with his design for an Embassy at Constantinople. After his return from Rome, Guillaume became architect of the Archives Nationales, and between 1876-78 built the great building on the Rue des Archives. He replaced Questel as architect of the palace at Versailles, and amongst the work there restored the hall of the Jeu de Paume. and amongs the work there resolved the half of the Seu de Faume. At the death of Lefuel, he was appointed architect to the Louvre and Tuileries, and to him is owed the decoration of the hall of modern French masters, the halls for the Collection Dieulafoy, and the Daru staircase, the mosaic ceiling of which excited such lively controversy. He also created the new garden which occupies the site of the Tuileries. In collaboration with the sculptor, Doublemart, He also created the new garden which occupies the he gained the competition for a monument in commemoration of the defence of Paris, erected on the Place Clichy, and he and the sculptor, Cugnot, designed the commemoration column at Callao, Peru. With M. Renaud, he rebuilt the Hôtel de Ville at Cambrai, Peru. With M. Renaud, he rebuilt the notes us vine at camera, while individually, he designed a number of tombs, hôtels and While professor of the Theory of Architecture at the Ecole des Beaux-Arts, he published several works.

Taken all-in all he was a most amiable artist, and much respected

by his confréres in the Société Centrale des Architectes Français, which he joined in 1866.

SPECIFICATION WRITING.1—II.

BRICKLATER. -- [REFER TO GENERAL CLAUSES.]

Wно supplies scaffold? who furnishes water?

ricks: — For cellar, piers, facing, backing, footings.

What kind and color? any particular make? how laid? what kind of mortar? If for footings, width, number of courses;

what racking?

Bonding:—Old English? Flemish! behind facing? every fifth course headers?

– Make, color, kind. Catalogue number. Specify utside returns. Any lead-covering on moulded-bricks? Moulded-bricks : all inside and outside returns. Any Building in blocks, strips, frames.

Levelling for joists, sills, frames, heads, plates.
Chaces for pipes, flues, posts.

Arches: — Flat, semicircular, arch-head, elliptical, segmental.
Bricks ground or moulded?

Mortar: — Cement? — what kind? with sand? what proportion

-what kind? with sand? what proportion? Cement tests: - Boiling, tensile, compression - what fineness? what mesh?

Lime-mortar: - What lime, if any preference? what sand? what pro-

portion?

Colored mortar: — What color? any particular make of color?

Trimmer hearths. Ash-pits. Foundation for range. Bricking of

Fireplaces: — Backs and sides; what kind? state price; any dampers?
Inside hearths; what kind? specify round hole and plate.
Outside hearth; what kind? name price. Omit place in other

Brick finish on face of chimney breast? what brick?

Any porch-piers? columns? any special chimneys? any brickpavements?

Walls to be built from outside scaffold or overhead from trestles?

Clean walls; oil walls?

Cisterns:—Brick? cemented? man-holes, covers; padlocks? guarantee tightness.

Any fireproofing: — Hollow tile? porous terra-cotta? brick arches? Specify sizes.

Specify sizes.

Any damp-proofing: — Inside furring bricks?

Any damp-proof under walls — asphalt? slate in cement?

Terra-rotta: — Name of maker; specify parts to be terra-cotta. Specify straightness, color, even shade, square joints.

Modelling. Omit? name price?

Old material: — Clean and pile? use headers and bats? to be contractor's? owner's? reused, or carted away?

Wet bricks before using; how?

Any joist-hangers or sockets? if so, notify bricklayer to build in.

Underpinning, see "Mason."

MOSAIC FLOORS AND WAINSCOT. - [REFER TO GENERAL CLAUSES.]

Name price per foot.

Specify kind and pattern.

Marble wainscot? floors! kind? thickness? finish?

Other marble-work, if any.

Tile hearths? facings? Name price per foot set. Floors, wainscot - mosaic ? CEMENT FLOORS AND PAVEMENTS

Specify method; thickness; who fills to cement level?
Name kind:—Granolithic? metallithic? any other make? require guarantee.

CARPENTER. - [REFER TO GENERAL CLAUSES.]

Does carpenter superintend work? give sizes, heights, etc., from

drawings.

Who supplies scaffold for mason? for bricklayer? centres for arches? strips for furring? blocks for finish?

pists: — Kind, sizes, backing and lining, where used? Porch?

Framing hangers, double-trimmers, headers, double under parti-

Framing for hearths, flues, stairways, lifts, skylights.

Bridging, kind; how often? what sizes?
Any hangers or sockets? what kind? whose make?

Joists adzed for tile-floor or mosaic?

Joists adzed for tile-floor or mosaic?

Floor cut-in for tile-flooring or mosaic?

Girders: — Kind, sizes; bolted or spiked? framed level? or under joists? cleated?

Mill-construction: — Sizes of beams, material, plank-floor, splined.

Top floor: under flooring specification.
s: — Rough? turned? What kind? any bolsters? any brackets or

osts: — nought structs?

structs?

tuds: — Material, sizes, double at corners? at openings? Pockets
for sliding-doors, line them?

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Studs at corners of building: — Material, sizes, braced, what kind? Heads to partitions? Sizes.

Sill: — Sizes, material, bed in mortar; bolted to wall?
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Sit: — Sizes, material, bed in mortar; boited to wall?

Girts: — Sizes, material; let into studs?

Plate: — Sizes, material.

Sheathing: — Material, thickness; surfaced? matched? laid diagonally?

Sheathing-paper: — Kind, trade, thickness.

Rafter: — Sizes, material, framing. Outlookers? reftor-ends out to

Sizes, material, framing. Outlookers? rafter-ends cut to shape !

snape:
Trusses: — Describe fully with all rods, bolts, plates, shoes, etc.
Purlins, valley-rafters, hips: — Sizes, materials.
Roof-corering: — Sheathing, same as above. Paper: kind, trade-thickness. Shingles: lengths, widths, weathering, quality; trade-terms? shapes?

Gutter-strips: — Size; iron-brackets screwed on? Eaves-troughs: — See "Tinner."

Rough framing for cupolas, ventilators, trap-doors, cellarways, stair-horsings, porch-floors: sizes, material.

horsings, porch-floors: sizes, material.

Rough doors: — Cellarway, trap-doors, thickness; dressed? matched? battened? hinged? fastenings.

Flooring: — Material, quality, thickness.

Kind: combsawed? blind-nailed? face-nailed? width; matched? scraped! planed-off all over! joints struck! put down after plastering; screwed-down over pipes and wires.

Rough-floor under: kind, thickness, diagonal?

Ceilings: — Walls, lined? air-shafts, well-holes, elevator-shafts, dumbwaiter shafts, lined or cased? material; quality; beaded? matched? moulded? panelled?

moulded? panelled?

talls: — Material; posts, turned? material. Loose boxes? standing stalls? wood-carpet? parquetry?

MILLWORK (IN CARPENTER).

Cupolas, ventilators. Mouldings, posts, caps, louvres, finials, rails,

balusters, cornices.

Box-frames: — plank-front? reveal; solid-heads? jib-heads? yellow-pine sills, parting-strips, sash-beads; veneers on box-faces?

Twin frames; triple frames: double-hung weights?

Outside shutters? outside blinds? thickness, material, hinges, all

hardware

Inside blinds ! thickness, material, panelled ! rolling-slats ? hinges; all hardware

Inside blinds? thickness, material, panelled? rolling-slats? hinges; all hardware.
Rolling-blinds? kind, material; look out for pockets.

Casement-frames:— Thickness; moulded? transoms?

Sash:— Sizes, material; any jib-head sash!
How hung: with hinges! lead-weights? iron-weights? sash-balances? brass tape? bronze-chain? cords?
How fastened! look out for right kind.

Fly-screens:— What make! special? thickness, kind of wire.

Inside-sills:— Kind, material; moulded?

Architraves, plain? with band? with cap? Material: any variation through building?

Washboards, sizes, size of cap. Sub, sizes, if any. Material any variation through building?

Jamb-casings, head-linings: material, plain? moulded?

Rebate-strips? sizes, material.

Boards for pipes:— Material; moulded?

Casing over chaces for pipes:— Panelled? screwed; brass-screws?

Shelving:— Material.

Pin-rails:— Material; hooks? wooden pins?

Dressers:— Pantry: with glass doors? panelled doors? hardware; material.

Kitchen: Material, hardware; drawers? cupboards under?

material.

Kitchen: Material, hardware; drawers? cupboards under?

Drain-boards: — Material.

Porches: — Describe fully: mouldings? turnings! brackets? carving?
lump sum? name carver? omit? contractor to supply material for

carving? ront-door: — Frame: size, material; panelled-jambs? Transom? moulded? transom sash: thickness, pivotted? hinged? fixed? all

hardware.

Doors: thickness, material, moulded? panelled? with glass double? single? Dutch? [if Dutch, look out]. All hardware? I hardwood, veneered.

Vestibule-doors: — Side-lights? fixed? sash? thickness. Transom All hardware? If

moulded? Transom sash: thickness, pivotted? hinged? fixed? all hardware.

Doors: thickness, material; same as front door? for glass? all hardware. If hardwood, veneered.

nside-doors hung: — Thickness, material, number of panels; moulded?

all hardware.

Closet-doors, same? all hardware. If hardwood, veneered.

Sliding-doors: — Thickness, material, number of panels; double or single? astragal or rebate joint? with edge strips? all hardware. If hardwood, veneered.

ors to water-closets: - Slat? panelled? short? spring-hinges? all hardware.

hardware.

Doors to shower-baths:—Slat? panelled? short? spring-hinges? all hardware; material.

Wainscot:—Thickness; mouldings? panels? note carving, if any.

Outside-steps:—Framing, material, moulding, setting.

Cornices, Pediments:—Material, quality, mouldings, brackets; any carving? lump sum? omit!

Staircarys:—Back stairs: treads, nosed, risers, string, housings; open string? rail, balusters, posts, mouldings.

Main stairs: lump sum? without horses? without finishing?

Water-troughs:—Material, ploughed-joints? white-leaded! straining-rods? rods?

Feed-bins: — Material; zinc-lined?

Mantels: — Price fixed? omitted?

Elevator-screens: — Material.

Dumb-waiters: — Kind, make; price allowed? omitted?

Sliding sash - partitions. Pulpits. Altars. Altar-rails. Pews.

¹A lecture delivered before the Architectural Department of the University of Pennsylvania, by Mr. T. Roney Williamson, architect. Continued from No. 975, page 81.

Benches. Vestment-lockers. Choir-lockers. Reredos. Hotel-counters. Desks. Bank-partitions. Bank-counters. Counters. Store-fix-tures. Show - cases. Bookcases. China - closets. Harness - closets. Picture-mouldings. Ceiling-beams. Panelling. Does carpenter close-in openings with muslin in cold weather before glazing?

PLUMBER. - [REFER TO GENERAL CLAUSES.]

Permits. Sewer-connections. Board of Health rules.

Drain-pipe: — Jointing, cement, sizes, kind; for soil; for rain-conductors.

ductors.

Is drainage to city sewer? well? flush-tank? who digs? where?

Is drainage Waring's system? done by patentee or plumber?

Soil pipe:—Size, weight, trade weight or mark; coated? all fittings; trap, running-trap, clean-out, lead-joints; carry soil-pipes through roof; any anti-siphon pipes? test soil-pipes to three pounds' pressure.

Supply-pipe from main:—Material, size, joints—wiped if lead, screw if iron galvanized; stop-and-waste; pave wash; if lead-pipe, give weight per foot.

Supply-pipes in because Size of the stop of the stop

per foot.

Supply-pipes in house: — Sizes, materials, to each fixture; lateral runs below floors; stops-and-wastes on rising branches; tags on faucets; boiler-connection, hot-water supply, proper supports, brass-ferrules for lead-connections, wiped-joints on lead-pipe. Pipes exposed? if so, nickel, or bronzed?

Tank: — Wood? cedar, size or number of gallons; number hoops; iron? painted? galvanized? size, number of gallons; overflow; drain, where to? stop on drain-pipe.

Safety-tray: — Lead? zinc? number pounds to foot; waste from same to cellar-floor? to outside building?

to cellar floor? to outside building?

Waste-pipes:—Material, sizes; when exposed, nickel-plated brass? lead? waste-pipes: — Material, sizes; when exposed, nickel-piated brass! lead: give weight; galvanized-iron? cast-iron coated? give trade weight; carry waste through roof, anti-siphon pipes? does waste join soil-pipe? any grease-traps? — brick or at fixture? does waste run separate to well? to sewer?

Traps: — On all fixtures; what kind — "Bennor?" "Cudell?"
"Puro?" "Bower?" brass? lead?

Fixtures: — Give many of each. Water-closets: — - Give catalogue page and numbers if possible, and how

- Include seat and lid? cistern? marble under water-

closet?

Bath-tub:—Cased? splashboard! what kind? marble under? what waste! what faucets! sprinkler? silver or nickel?

Washstands:—Iron? marble? exposed? apron, brackets or legs? bowl—oval? round? size; decorated? plain? waste fixture, what kind—silver-plated! nickel? faucets—what make, silver or nickel?

Hip bath?—What kind? silver or nickel trimmings?

Shower-bath:—What kind? silver or nickel trimmings?

Pantry-sink:—Porcelain? copper! enamelled-iron! exposed! kind of faucets; make; silver? nickel? brass?

Kitchen sink:—Size, kind, make, legs? brackets? back? faucets, kind, make; brass?

Stationary wash-traus:—What kind—soapstone? enamelled-iron?

kitchen sink: — Size, kind, make, legs! brackets! back! faucets, kind, make; brass?

Stationary wash-trays: — What kind — soapstone! enamelled-iron? porcelain? wood! indurated-fibre! with lids! what wood! what faucets — brass?

Urinals: — What kind? make? with marble or slate backs, floors, sides! Automatic, or with faucets? Waste from floors.

Slop-sinks: — Galvanized! painted! enamelled? porcelain?

Any marble or slate enclosures for water-closets? marble floors?

Do washstands stand in rows! marble tops jointed or in one?

Are shower-baths enclosed in marble or slate partitions?

Circulating-boiler: — What make? self-cleaning? on stand? on wall? waste; sediment-cock; galvanized-iron? copper? copper connections? galvanized-iron connections?

Range: — Stationary; who sets? portable? slate-bottom? slate-hearth? zinc-hearth? plate-warmers?

Hotel-fixtures: — Broilers, boilers, steam-cookers, plate-washers, mangle, washing-machines, hot-tables?

Gas piping: — Permits. Comply with Gas Company's rules and regulations. Test system. Cap outlets. Pipe to grade to meter connection; stop-and-waste. No drops in pipe to outlets. No cutting of joists at greater distance than one foot from bearing. Measure for all outlets to centre of ceilings or heights and position on walls. No pipe appellers then one tool for inch. to centre of ceilings or heights and position on walls. No pipe smaller than one half of an inch. Specify sizes of mains and

branches. Are pipes to be exposed?

Any hot-water heaters: — Who supplies? who connects — heater-con-

tractor? or plumber?
Any stable? bell-traps, stalls, gutters.
Hydrants with stop-and-waste below frost?

TINNER. - [REFER TO GENERAL CLAUSES.]

Roofing: — Flat-joint? standing-groove? cleated? tinned nails.

Quality of tin, branded? IC? IX? painted? what kind of paint?
paper under, what quality and make, trade thickness.

Flashings: continuous, width; broken? sizes, around chimneys,

nailed? bonnetted? Around skylights, carried-up under galvanized-iron or under

sashes, if wood. Trap-doors, up rim, tacked to top edge, over scuttle down sides of

Gutter strips: Twenty-inch tin, same quality as roof, brought once over edge of strip, tacked, paper under, same as roofing. Cut for

rain-conductors.

rain-conductors.

Eaves-troughs: Quality tin? bead-edges? hung level? hung with grade? kind of hangers.

Rain-conductors: kind, size, quality, trade thickness, connect with gutters, wire balls; do conductors connect with terra-cotta pipe or discharge on ground? proper shoes.

eat-boxes:—Quality tin, bright tin, cleated, stayed, sizes, collars for provinces.

Heat-boxes: — Quality tin, bright tin, cleated, stayed, sizes, collars for registers, for heater-pipes, for radiator-boxes, asbestos-paper around studs, wire-lathing over boxes, dampers, boxes double?

Registers: — Does tinner supply or does plasterer or heater-contractor? kind, sizes.

Tin shingles: - Any particular make! painted two coats when on.

PLASTERER. - [REFER TO GENERAL CLAUSES.]

Lathing: - White-pine? spruce? hemlock? free from bark, sap. Wirelathing ? - stiffened ?

Other lathings: Dovetail iron? expanded metal? Are outside walls stripped? Wire-lathing over heat-boxes, or does tinner do this? ortar:—Lime, any make?

Stripped: wire-taking over hear-boxes, or described:

Mortar: — Lime, any make!
Sand, for brown coat! bar —? road? creek? bank —? screening?
Hair, cow's hair, fresh. Run mortar two weeks before using.

Kind of plastering: — Two coat? slip coat? three coat? with scratch coat, brown coat and finish coat! white coat! white sand. Sand float? white sand? Lath and brown coat cellar ceiling.

Plastering free from cracks, blisters, wind, marks of float. Must stop, or is heat provided in cold weather? Who provides heat? does plastering are registers! crocks for stove-pipes with caps and setting. plasterer set registers? crocks for stove-pipes with caps and setting.

Ornamental-plastering: — Cornices — enriched? centre-pieces? panels?

moulded? enriched! coved ceilings? Arches or arch moulds?

Patent-plasters: - What kind? make? guarantee.

Fire-protection: - Over beams, over columns, woodwork, what kind?

GALVANIZED-IRON. - [REFER TO GENERAL CLAUSES.]

Cornices, crestings, finials. Weight of iron or No. guage; painted before setting inside and outside. What paint?

Skylights: — Hyatt's patent! ventilating! condensing! glass? does painter supply! ventilators, attachments for handling, rods, levers, cams, shafts, cog-connections. Show shapes on drawings; flat! pitched one way! hipped! gabled!

ROOFER. - [REFER TO GENERAL CLAUSES.]

Tin-roof, under "Tinner."

late: — Quality, quarry, sizes, color, grade, weathering. Tinned-nails, two to each slate, double at eaves, blind hips and ridges, cemented? snow-guards? — wire, at each joint, or other form of

cemented: show-passed agard?

Tiles: — Kind, quality, bedded in hair-mortar? copper-nails? copper-wire? pattern, shapes, color. Any conical roofs? special tiles.

Tile-crestings, hip-rolls.

Tin-shingles: — Make. See "Tinner."

IRON-WORKER. - [REFER TO GENERAL CLAUSES.]

Stirrups, joist-sockets, bolts, rods, washers, shoes for trusses, upset ends, anchor rods and plates, straining-rods, bearing bars for openings. Iron carpet-strips, iron-bricks for screwing onto. Manhole rims and caps, cellar-gratings, window-bars, grilles, painted; patent process? Store-gratings, galvanized? with hasps? padlocks?

Pavement hoist doors, cellarway doors, with glass? brass-hinges? Archimedean-lifts for cellar-doors?

Iron-stairs: Rails, posts, iron-treads, risers, rubber-tops? marble or slate treads and risers? in cut stone?

Steel-beams:—Lengths, widths, weight, angle-plates, connections, bolts, rivets, for floors, to have bearing-plates, painted before

setting.

Columns, cast: — thickness, bore for test, planed tops, bottoms, caps, bases — loose! drilled for bolts.

caps, pases — 100se? druhed for bolts.

Columns, wrought: — kind, make, length, required strength.

Brackets, struts, wrought? cast? for bolts? cornice-rods.

Clean-out doors. Ash-pit doors.

Fireproof-doors, vault-doors, no burglar-proof,— give all dimensions, thicknesses, fastening.

Iron-shutters: — lugs for hinges? built-in? open from inside?

open from outside?
Wrought window-frames? sash? sills outside? heads outside?
Iron-trusses refer to details, separate specifications. For trusses,

contractor submit drawings.

Chimney-stack cap — cast-iron? wrought-iron? bolted? Expansion-bolts. Fire-escapes? Iron-gates, railings. Harness-hooks. Feed-boxes, steel-wrought? cast-iron?

reed-noxes, steel-wrought: cast-fron!
Iron-mangers: cast? wrought?
Water-troughs: This specified elsewhere.
Stall-guards: wire galvanized? cast-fron? wrought-fron!

Heavy-wrought strap-hinges, special?

PAINTER, GLAZIER. - [REFER TO GENERAL CLAUSES.]

- Burn off ! wash off ! sandpaper ! Putty-stopping Old work: -

Old work: — Burn off! wash off? sandpaper? Putty-stopping nail holes, cracks. Shellac-stopping knots, sap.

Painting: — To sandpaper woodwork. Priming. Three coats paint. How many colors tints?

What kind of paint: Mixed or ground? what lead? any zinc? what colors? any make? all paint to have white-lead body? any ready-mixed paints? what make?

Ironwork painted? how many coats?

China gloss-painting? how many coats?

Enamel-paints: on tub? on walls?

Paint to be gloss finish? paint to be dull finish? painter to protect floors, stonework, etc. while painting.

Natural-wood: — Varnish: Any particular make? how many coats?

Rub each coat.

Rub each coat.
Finish: Full gloss? dull polish? egg-shell finish? floors varnished?

Finish: Full gloss? dull polish? egg-shell finish: noors variabled or wax finished?

Staffied: What color? Putty-stopping, colored to match wood. Shingles stained: What make of stain? what color and number? Porch floors painted? Porch ceilings painted or varnished! Walls or ceilings painted! sized? how many coats? colors?

Glazing: — Any floor-lights? rough-plate? how thick? Any skylight glass? rough-plate! how thick? In galvanized-iron specification? Plate-glass, specify windows, American? French!

American cylinder-glass, double strength, what grade! single

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Chances crystal sheet? French crystal? Ground-glass? Obscured glass? Glazed-doors — specify. Inside-windows.
Stained-glass? leaded? specify price per foot? omit? lump sum?

HEATER. - [REFER TO GENERAL CLAUSES.]

Hot-air: — Name make of heater; bricked in? who does it? Portable?

Specify size or make contractor guarantee and leave size to him.

Cold-air duct: brick? wood? terra-cotta pipe? from separate opening? if so, see that it shows on plan: from cellar-window? see that carpenter boxes in and sets sash. Does carpenter make box?

Bright tin-pipes to flues: Size, or leave to contractor if he guarantees.

Registers if not, where, tin-flues if not, who.
If contactor guarantees, have flue sizes approved by him.
Heater should have shaking-grate, Mershon or approved, auto-

Heater should have shaking-grate, Mershon or approved, automatic-damper, water-tank.

All wrought-steel? All cast-iron? no combination. Galvanized-iron smoke-pipe, give thickness in trade term.

Hot-air and steam combined:—Name make. All other specification like hot-air, for hot-air, and steam, for steam. Galvanized smoke-pipe, give thickness trade term.

Steam:—Name heater, or contractor guarantee. Cast-iron sectional? wrought-iron? bricked in or not? Automatic-damper, shaking-grate, safety-valve, steam-gauge, water-gauges. Blow-off cock, into cellar? into well? not permitted in sewer.

Direct? what make of radiator? automatic air-valves nickel? wood-handle nickel-plated valves? Jenkins Bros.? nickel-bushings in floors. Radiators bronzed? painted? pipes bronzed? painted?

Direct-indirect? same specification as direct, but specify, radiator to be box-radiator, or "direct-indirect"—and specify, galvanized-casings to outside air, through walls, provide gratings, or from cellar on first floor. If from cellar, provide cold-air ducts from cellar window, galvanized-iron, say twenty-two gauge.

Indirect: Name radiator; air-valves automatic, brass-seat valves? Jenkins Bros.? radiators hung from joists? on proper irons?

Cold-air supply: galvanized-iron, name thickness, flat-ducts, curved angles, duct to open through wall; if so, see that opening is shown on plan. Radiator-boxes, same galvanized-iron, put together with bolts, or pins, to come down, roofs of boxes, pine, tin-covered.

Does contractor provide flues? registers? or are they in other trades? if so, what trades?

Guaranty invariable. Written, sealed, to seventy degrees in zero weather,—also against water-hammer in pipes, not over ten pounds of steam to be necessary to heat.

Or does contractor provide specifications with bid under same

of steam to be necessary to heat.

Or does contractor provide specifications with bid under same guaranty. Any hot-water heaters? coil?

guaranty. Any not-water heaters? coil?

Large plants, with extended work, fans, pressure or exhaust, special expert specifications.

Steam-heat from power-boilers, reducing-valves, to heat-system, return-pipes to tank and pumps.

Power-boilers: horizontal? tubular? upright? steel? Harrison safety? Babcock & Wilcox, safety? All to be tested to carry one hundred pounds, special work more. Boiler Insurance Company's certificate to be delivered to owner.

Engines: Take specifications and guaranty from bidders. Refer to experts.

ELECTRICAL WORK. -- [REFER TO GENERAL CLAUSES.]

- Refer to Underwriters' Association. Special specifications: contracts subject to inspection approval of Association and observance of all rules of Insurance Company.

Dynamos: — Special specification.

Call-bells, annunciators, buttons, pulls, batteries, wire insulated, run in tin tubes. Kind of buttons, as to finish. Pull at front door to match furniture. Annunciator to have names of rooms, etc.

Hotel annunciator: Take maker's specification.

ifts:—Hydraulic? electric? direct steam? city water pressure hydraulic? name maker; Ellithorpe safety-cushion? other safety-brakes? Does contractor furnish car? Own design? Your design? Gas to car? electricity to car? annunciator and buttons. Does contractor furnish?

Electric-stop and start, safety? method of control, rope? winch? lever? guides, wood? iron? machinery, take maker's specification. Refer to expert. Guaranty to cover speed, and durability. Require

insurance and inspection from insurance company.

Hand-hoists:—Require specifications from makers. Guides at back? at all corners? at two corners? friction and ratchet safety-brakes, hatchway-doors? automatic-bars? brake and rope through stories. Carriage-hoists: - Same. Friction automatic safety-brakes, brake and rope on band wheel.

Parement-hoists : -- Take maker's specifications, generally winch-hoists, chain-cables.

RUSTLESS COATING FOR IRON AND STEEL.



the meeting of the American Society of Mechanical Engineers, lately held at Montreal, Mr. M. P. Wood read a paper entitled "Rustless Coating for Iron and Steel." It treated of tinning and enamelling metals lacquering, and other preservative methods. After describing the various processes, and their applicability to certain conditions, Mr. Wood concluded in a series of

negations that would have caused the little, quarrelsome, English poet of the eighteenth century to die of envy. He said, in respect to Japanese lacquer:

"The adaptableness of this natural vegetable product to the preservation of metallic surfaces, as well as those of wood, paper, and other fibrous bodies, has never received the attention of engineers that the industrial importance of this method of coating and

protecting surfaces demands. The general idea that its application is one of art, and is only adaptable to bric à-brac, is wholly erroneous. The Japanese use it for an infinite variety of purposes — acid tanks, coating the keels of ships, highly-finished coach and decorative panels, and articles for domestic use, resisting hot water, soap and alkaline solutions. It may be truly said that were it not for the bamboo and lacquer trees, life for the Japanese would hardly be worth living. There is no reason why the lacquer tree should not thrive in this country. Its sap, which is used as the material for all lacquer-work, is a natural essence, and vastly superior to any varnishes used here. Unlike even copal, which is an artificial mixture of resin, fatty oils and turpentine, Japanese lacquer is a ready-made product of nature that hardens into a mirror-like smoothness, never splits nor cracks, and is of great durability. The art lacquer-work of Japan is essentially individual, and ought not to be treated as an undistinguishable whole. The superiority of the artwork is due not only to the special merit of the material, but also to the care and skill shown by the Japanese in the manipulation of it.

"There is as wide a distinction between the ordinary lacquer tray, or cabinet of commerce, and the exquisite lacs of the great Japanese artists, as between a theatrical poster and a canvas of Raphael. Each of the great masters of lacquer has created a style of his own, and has founded a school of which the traditions have been kept alive by his successors for centuries. At the Centennial Exhibition of 1876, in the Japanese department, there were exhibited plates, pans, etc., evidently of a common quality of lacquer used by sailors and others for domestic purposes; also some samples of a finer grade in trays and cabinet-work that had been sunk in the sea over fifty years, and though covered with barnacles and other marine growths, were practically unharmed, so perfectly had they been protected by the lacquer. It seems almost incredible that so valuable an article that can be produced as cheaply as maple sap has remained comparatively unknown in this country and Europe, at least so far as applying it to the palpable protective purpose that nature evidently designed it to be used for."

His negations were stated thus:

"In conclusion, the whole question of how best to protect iron and steel from corrosion in all the varying conditions that the wants and usages of to-day demand, seems to resolve itself into a category of 'Don'ts,' as the best method of answering it, to wit:

"Don't use anything but common iron.
"Don't have any scale on that.

"Don't use anything but the best iron and steel.

" Don't polish those

"Don't paint it with anything but pure linseed oil and oxide of lead or graphite paints.

"Don't let the air get to it if it is damp.

"Don't keep it from the air if the air is pure and dry.

"Don't let sea air, sea water, acidulated or sulphurous, ammonial or other fumes and liquids have access to it.

"Don't think it unnecessary to protect it in any case, because swords, armor, and other bright articles of iron and steel have been found uninjured by rust after an exposure of over five hundred years with no other protection than that afforded by the closed

room in which they were placed. "Don't think your own product would not, under the same conditions, last as long as the piece of iron that was walled into one of the

burial chambers of the Pyramid three thousand years ago.

"Don't put it in any location where it cannot be inspected and its true condition ascertained at any time, by anybody, your successor in the trust not excepted.

"Don't think that magnetic oxide, electroplating, enamelling, or any other method of protection will take the place of constant inspection, even if the coating is fired on by a Columbiad.

"Don't imagine because Cleopatra's Needle has had to have a coating of wax to protect it, that it is not a good material to apply

to other substances than granite.

"Don't let the cost and interest accounts be the governing factors in the case of protecting any metal superstructure on whose continuity and strength human life and safety depend. The old story of 'For want of a nail the shoe was cast, the horse disabled, a battle and kingdom lost,' finds too many parallels in the engineering practice of to-day, until in some cases we seem to need protection rom the engineer quite as much as from the decay of the materials

in which he experiments.
"Don't imagine that Macaulay's New Zealander, who has sketched the ruins of England's power and greatness, and has come to the New World to see how we have fared from the gnawing teeth of time, will not recognize amidst the ruins of our Statue of Liberty, Brooklyn Bridge, and other monuments of our progress, the ominous streaks and stains due to the corrosion, not only of iron and steel, but that of the better class of metals, and will exclaim: 'We are wiser in our generation, and fear not and can control these forces that, like the Arch, slumber not nor sleep.'"

In the discussion, one member stated that, for tanks and outdoor use, a solution of asphalte in bisulphide of carbon known as "P. and B." paint had given the best results; attention was also called to a paper by W. Thomson, read before the English Society of Chemical Industry. It was there stated that a good plan for protection was to connect structures by wire with a ball of zinc buried in moist ground, by which the destructive effects of electrolytic action were transferred to an outside body.



T-SQUARE CLUB OF PHILADELPHIA.

HE following Resolutions were adopted at a special meeting of the T-Square Club held Friday, August 31, 1894:

Whereas, it has pleased God in His infinite wisdom to remove from amongst us our friend, John Lambert Moss, and

Whereas, we feel that some expression of our sorrow, and appreciation of his large-heartedness and geniality will be meet and proper at this time,

Be it Resolved, that we, the members of the T-Square Club, do sincerely mourn his loss, and that we, while bowing to the dispensa-tion of the Divine Will, feel that his life has been a sun set in noonday, that his future promised much, and that his premature end has robbed us of a fellow-member whom we felt it a privilege to know, and whose considerate and unselfish nature had won for him many

Therefore, be it Resolved, that a copy of these resolutions be sent to his bereaved family, and that they be published in the daily and architectural papers.

THE TEXAS STATE ASSOCIATION OF ARCHITECTS.

THE Texas State Association of Architects held its election of

officers at Waco, Texas, on August 6, resulting in the following:
Nathaniel Tobey, Galveston, President; C. A. Gill, Dallas, First
Vice-President; Sam P. Herbert, Waco, Second Vice-President;
J. Riely Gordon, San Antonio, Secretary; A. A. Messer, Fort
Worth, Treasurer; Alfred Mueller, Galveston, Chairman Executive
Committee; J. S. Moad, Dallas, M. R. Sanguinet, Fort Worth, A. N. Dawson, Fort Worth, P. S. Rabitt, Galveston, Executive Committee.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

ENTRANCE TO THE STARKWEATHER HOUSE, PAWTUCKET, R. I. [Gelatine Print, issued with the International and Imperial Editions only.]

HOUSE FOR MRS. NELLIE J. MORRISON, CAMBRIDGE, MASS. C. H. MCCLARE, ARCHITECT, CAMBRIDGE, MASS.

STABLE FOR W. S. JOHNSON, ESQ., WARWICK, N. Y. MR. E. G. W. DIETRICH, ARCHITECT, NEW YORK, N. Y.

COMPETITIVE DESIGN FOR THE Y. M. C. A. BUILDING, TROY, MR. F. R. COMSTOCK, ARCHITECT, HARTFORD, CONN.

CENTRAL FALLS SCHOOL, GREAT FALLS, MONTANA. LAVALLE, ARCHITECT, BOSTON, MASS.

COMPETITIVE DESIGN FOR AN OHIO CHURCH. MR. W. S. DUT-TON, ARCHITECT, CLEVELAND, OHIO.

COMPETITIVE DESIGN FOR THE LITHGOW PUBLIC LIBRARY, AUGUSTA, ME. BOSTON, MASS. MESSRS. PAULSEN & LAVALLE, ARCHITECTS,

[Additional Illustrations in the International Edition.]

ENTRANCE ROTUNDA OF THE AGRICULTURE BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MESSRS. MCKIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

WEST FRONT OF THE ELECTRICITY BUILDING, MESSRS. VAN BRUNT & HOWE, ARCHITECTS, KANSAS CITY, MO., AND NORTH FRONT OF THE ADMINISTRATION BUILDING, MR. R. M. HUNT, ARCHITECT, NEW YORK, N. Y. WORLD'S COLUMBIAN EXHIBI-TION, CHICAGO, ILL.

Gelatine Print.1

Note: — The unusual pressure brought upon the Custom-house officials by the passage of the new tariff law has prevented us from freeing our usual consignment of imported prints in season for use with this week's issue.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE DECAY OF SPRUCE BEAMS IN BRICK WALLS.

HARTFORD, CONN., August, 29, 1894.

To the Editors of the American Architect:-

Dear Sirs, — Under ordinary conditions, how long will it be before the ends of partly-seasoned, large size, spruce joists decay, when laid solid in outside brick walls?

when laid solid in outside brick walls?

[EVERYTHING depends upon the amount of seasoning, the character of the brick walls, — whether they are porous, so as to admit air, or hard, so as to keep it out; the character of the mortar, — whether of lime, which has a preservative effect, and, by its shrinkage, gives room for air to enter around the ends of the joists, or of cement, which does not shrink, and naturally contains in combination a large amount of water; whether the wall is damp or dry when the timbers are built in; whether the joists are left open and unpainted, so that air circulates freely about them, or are painted or varnished, or enclosed by floors and ceilings; whether the floors are made more airtight by paper, or matching, or both, and whether the ceiling is of lime mortar, which is very porous, or of adamant or other plaster-of-Paris cements, which are very impervious, and contain a great deal of loosely-combined water; whether the air in the rooms is frequently changed, dry and warm, or close and warm, or close and cold; whether the timber was inspected when put in, etc. Thousands of large, spruce timbers are built close into brick walls, and remain free from decay indefinitely; but, especially for a floor over a ceilar, the modern practice is to leave a little space around them. — Eds. American Architect.]



OSTON, MASS. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts. CINCINNATI, O. - Special Exhibition of Paintings: at the Art Museum, during September.

New York, N. Y. - Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

VOTESS!

St. Clement Danes, London. — It is not often that the dingy tranquillity of the Church of St. Clement Danes is disturbed, as recently by a fashionable marriage. Indeed, it would be difficult to name a church that more people pass and fewer enter, and it cannot be said that at any period of its existence it has been a fashionable place of worship. It seems, however, to have usually possessed a sort of grave respectability, and to have had sufficiently wealthy citizens interested in its welfare to be repaired at considerable cost early in the seventeenth century, and entirely rebuilt a little later in its present form, under the direction of Sr. Christopher Wren, the actual architect being Edward Pierce, while the steeple and portico were designed by Gibbs. The building which it replaced must have contained work as old as any then existing in London; for the foundation is of great antiquity, perhaps nearly as old as that of St. Ethelburga herself, and the precise reason why the patron saint of iron-workers and wool-combers became associated with the Danes is lost in the mists of antiquity. According to one story, a number of Danes, who, in the reign of King Ethelred, sacked and burned the monastery of Chertsey, were put to death in the churchyard of St. Clement's Church, which thereafter was known as St. Clement Danes. According to another tradition, the name came not from the Danes that died, but from the Danes that lived around it. For there was a time when the Danes, who, whichever story may be true, were seemingly not regarded altogether in the light of social acquisitions in England, were ordered peremptorily to leave the country, except such as might be married to English wives; while those who had so far naturalized themselves were forced to live between Westminster and Ludgate, and formed a colony on the river-bank near the Essex Street of to-day. Be this as it may, St. Clement's church-yard was held to be an appropriate resting-place for the body of King Harold, natural son of Canute, which after his bri LONDON. - It is not often that the dingy

memorials of writers among the worthy citizens whose virtues are recorded on its monuments. Two of Dryden's friends — Thomas Otway and Nat Lee — occupying nameless graves in or near the church, represent the Bohemians of their day; one of them died starving, the other drunk. Dryden himself was "of the parish of St. Clement Danes," and is so recorded in the register of his marriage at St. Swithin's by London Stone. Bunyan once lived opposite, somewhere very near where the business is carried on with which to day's bridegroom is associated. Dr. Johnson had a sitting in pew No. 18, and worshipped devoutly therein, taking Boswell with him to church there on Good Friday, 1773, and recording in his diary that he put two shillings in the plate on Easter Sunday, 1779. — St James's Gazette.

The Constable Lesdicueres and the Devil.—According to a legend current in the country around Grenoble, the ancient wall surrounding the park of M. Casimir-Perier's superb Château de Vizille in that district was built by the devil. No one knows exactly how old this wall is, but it is generally believed to date back to the time of the first proprietor of Vizille, the High Constable de Lesdiguières. The latter was very anxious to protect his grounds from trespassers, but lacked the money requisite to inclose it. On learning this, the Evil One visited him and offered to build the wall providing Lesdiguières would assign to him his soul after death. "How long will it take to build?" he inquired. "Oh, only two or three minutes," replied the Prince of Darkness. "You can't do it," retorted Lesdiguières; and on the devil asserting once more his power to do it within that time, the Constable made the following proposition: "I will saddle my mare, Bradamante, and will mount her at this point. I will then put the spurs to her, and at the same moment you shall begin to build the wall. If I can escape on horseback before the property is entirely walled in, I retain the right to dispose of my soul as I see fit. Otherwise, it belongs to you." Satan consented to this, and on the following day the trial was made. Lesdiguières got on his horse, and at the same moment two gangs of imps began to raise the stone wall that surrounds the property. They were in such a hurry, however, that when it came to joining the two ends of the wall they found they had carried one end past the other, leaving a space of about a yard in between. They had just begun to repair this error when Lesdiguières dashed through the opening thus left, not so fast, however, but that the tail of his horse got stuck in the masonry. Without hesitating a moment, the rider drew his sword and cut the tail off, leaving it sticking in the wall, and there, according to tradition, it remains to day, its place being marked by a queer and unaccountable patch of plaster in t

Geological Formation controls the Character of adjacent Cities.—The great fire, after all, did less for London by far than our happy isolation in a basin of brick earth. Egyptian Thebes, of the hundred gates, was built from the hard, red sandstone of the Nile and the still harder and redder granite of Syene. Periclean Athens was built from the marble of Pentelicus, in which Phidias could carve out with freer hand the living sculptures of the Parthenon. Modern Paris has its soft, white stone, exactly adapted to the florid needs of the meretricious Parisian decorative instinct. In Britain itself, Aberdeen has its appropriate cold, gray granite; Edinburgh is piled up from its own solid hills, Oxford has its oölite, and Bath its near quarries of facile freestone. But London, better placed, lies in the midst of a great bed of clay, beautifully designed by Providence to supply the commercially-minded London builder with abundant store of bad brick and coarse stucco. On this apt material, ready formed to his hand, the jerry architect has seized with sound business instinct, and raised aloft to heaven a great commercial city in the truest spirit of modern competition. Hence the distinguishing beauties of white-painted Belgravia and dusky-yellow Paddington; hence the long, straight lines of mansions almost as good as solid stone in the abyss of Bayswater; hence, also, the æsthetic reaction to sound, red brick in penitent South Kensington. Each is beautiful in its kind, from Bedford Park to untouched Stoke Newington, and each is notable alike for its wealth of individual fancy, its quaintness of expression, its local appropriateness, its strong sense of color, and its luxurious outgrowth of spontaneous ornament. The merchant princes of Mayfair, we all know, hold their court in palaces which shine with the Hymettian beams and Orient ivory; the thanes of Belgravia dwell in lordly halls which bring a blush into the checks of Venetian Foscari and Florentine Strozzi.— Grant Allen in The Fortnightly Reciew.

SMOTHERED IN QUICKSAND. — Arthur A. Williams, thirty-eight years old, met his death at Orange, Mass., early in August, by a peculiar accident. Soon after midnight, one of the large mains in front of the house of James Gavin burst and tore a hole in the road about six feet deep and ten feet square. Gavin, hearing the rushing waters, went out in the dark to learn the cause, and fell into the big hole and was nearly strangled with the quicksand. Williams, who lived in the same house, went to the rescue of Gavin, and succeeded in assisting him out, only to fall in himself an instant later, and before he could get out or assistance could reach him he was smothered. There was a pressure of one hundred forty-five pounds to the inch on the water.— Exchange.

ORIENTAL DISCOVERIES AT OAXACA, MEX.—In one of the oldest ruins in the State of Oaxaca, Mexico, a number of very rare and interesting images, found in metal, have been uncovered. The images represent people of Oriental appearance and dress, as well as priests in their robes of sacrifice. They bear hieroglyphics of an unknown character, and are elaborately wrought, with fine art lines shown in every curve. The images found thus far are of gold, either wholly or in part, and are coated with some unknown enamel, which has preserved them from all harm in the many years they have been buried in the soil.—Philadelphia Press.

Photographing the Earthquake.— An Italian seismologist has devised a method by which an earthquake shock is made to light an electric lamp for a quarter of a second, causing the face of a chronometer to be photographed, and thus registering the precise time at which the shock occurred.— *Invention*.

RATIO BETWEEN COST AND ACCIDENTAL DEATH.—According to M. Eiffel, the cost of lives of any great engineering work can be estimated, at least, as accurately as the cost in money. "It has been found," he says, "by statistical observation that in engineering enterprises one man is killed for every 1,000,000% spent on the work. If you have to build a bridge at a cost of 100,000,000%, you know that you will kill one hundred workmen." This statement, while rather an ingenious one, is not, it is stated, borne out by facts. Take the Eiffel Tower, for example. Six and a half millions' worth cost only four lives. The Forth Bridge, on the other hand, a contemporary points out, cost 45,000,000%, while the lives of fifty-five men were sacrificed in connection with its construction.—Boston Transcript.

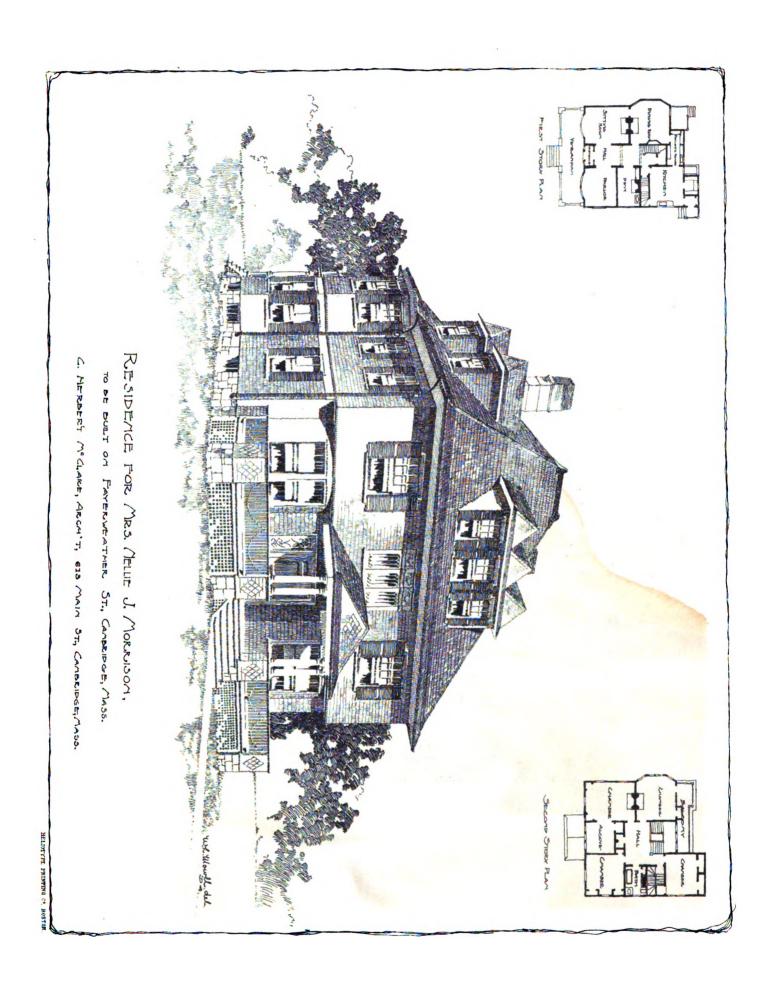
The Parliament House at Berlin.—The new German Imperial House of Parliament is to be opened by the Emperor with great pomp in October next. It has taken ten years to build, and cost about thirty million marks. It stands on the Königsplatz, opposite the Grand General Staff, and is a mixture of all conceivable styles, looking more like one of the nondescript blocks in the Chicago Exhibition than a building consonant with the general architectural character of the German capital. It is a floridly massive but fearfully mongrel pile. Bismarck helped to lay the foundation stone, and in all probability he will figure among the crowd of German sovereigns who are to surround the Emperor at the opening ceremony. His own statue, subscribed for by the whole nation, is to be erected opposite the main entrance. Then he and all his admirers will be happy forever after. — Cincinnati Commercial-Gazette.

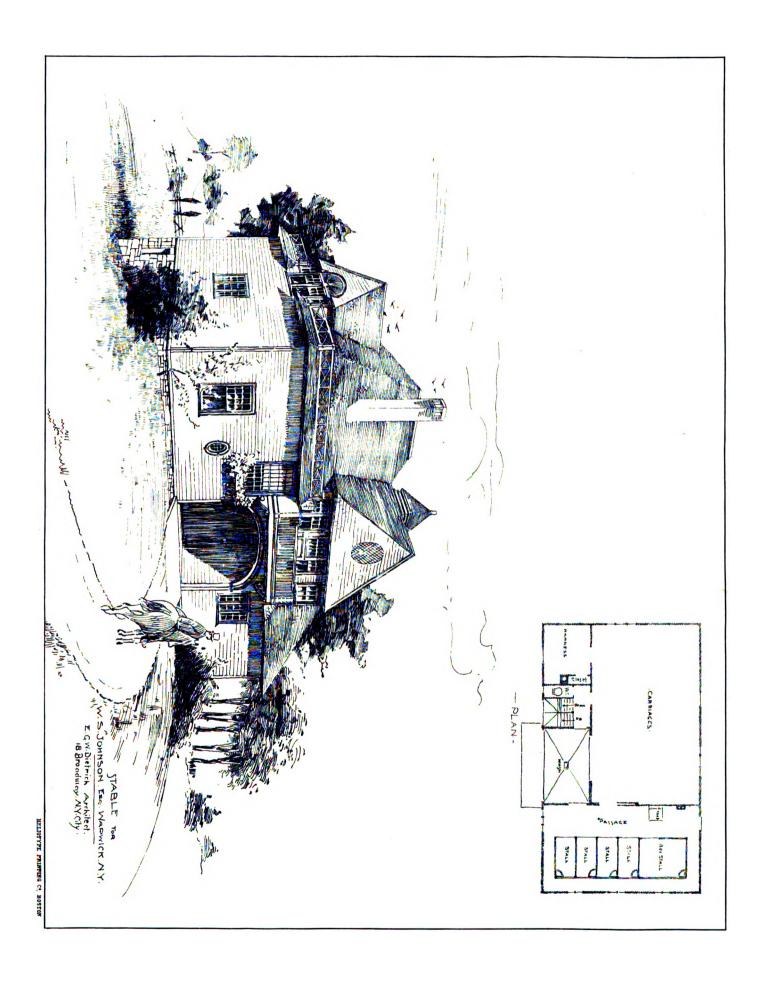
To Discover Flaws in Iron and steel is described in Industries and Iron. It is electrical, and consists of a small pneumatic tapper worked by the hand, with which the sample of steel or iron is tapped all over. With the tapper is connected a telephone with a microphone interposed in the circuit. One operator is required to apply the tapper, and the other to listen through the telephone to the sounds produced. Both are in electrical communication, but in separate apartments, so that the direct sounds of the taps may not interrupt the listener, whose duty it is to detect flaws. In applying the system, one operator places the telephone to his ear, and while the sounds produced by the taps are normal he does nothing. Directly a false sound, which is distinguishable from the normal sound, is heard, he signals for the spot to be marked, and by this means is able, not only to detect a flaw, but to fix its locality. — Nature.

A LATIN INSCRIPTION. — Two well-dressed men on a tour strolled in the vicinity of a handsome, new structure. "Wonder what this is?" queried one, casting his eyes about. "Ah, there is an inscription on the wall! Latin. Funny place to put it! I'm so short-sighted, can't quite make it out. 'Post Nobils.' Let's see! I've forgotten most of my Latin. What do you make of it?" The other, who was equally short-sighted, adjusted his eye-glasses, critically surveyed the inscription, and returned, "Hum! 'Post' means 'after,' of course; but 'nobils' gets away with me. Nobis, nobils, no — I declare I shall have to give it up. Let's inquire." Thereupon they sought out the intelligent custodian of the building and put their question. "What does that inscription mean?" The man repeated after them in a pitying tone, "It means just exactly what it says, and a fine into the bargain if you go to posting any bills round this place!" And the two short-sighted sightseers who had forgotten their Latin retired, looking reproachfully at each other. — The Churchman.

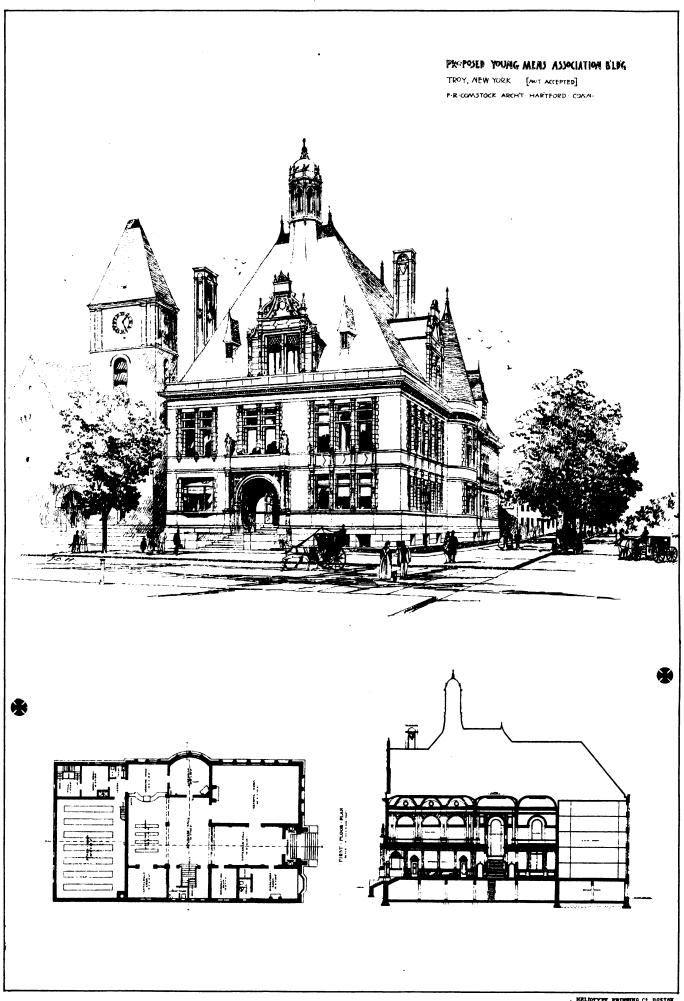
Carrara Marble Quarries.—The marble quarries, which are 400 or 500 in number, are situated far above the town, in the midst of the grandest and most savage scenery, says the English Illustrated Magazine. The soft, aërial hues which distance lends to the mountains disappear on nearer approach. The great peaks stand up against the sky in fantastic forms. No trees or verdure clothe their naked sides, no flowers grow, no water flows to fertilize that soil. The 6,000 quarrymen who are busy here appear as ants crawling on the vast hillsides. The marble is quarried by dynamite. Every moment explosions rend the air, and huge fragments fly up as if expelled from a volcano. Often the mine has to be placed in the perpendicular face of a precipice. Then the workman is lowered by a rope and hangs suspended, "like the samphire gatherer, 'twixt earth and heaven. A dreadful trade!" About 160,000 tons of marble are annually exported, of which most goes to America. The quantity is inexhaustible. The entire mass of the Monte Sagro, 5,600 feet high, which dominates Carrara, is solid marble. One of the most famous quarries is in the valley of the Polraccio. From this were extracted, in Roman times, the 1,700 tons of marble that served for the construction of Trajan's column at Rome. Here Donatello got the block which he carved into his "St. George," and Michael Angelo the one for his "Moses." From here, also, came the huge block mentioned in the memoirs of Benvenuto Cellini, which served for the colossal Neptune of Ammanati in the middle of the fountain of the Piazzi della Signoria at Florence. Unlike the miner, who burrows underground, he works in a blinding glare of light. The flerce heat of the Italian sun beats upon him in summer. The cold blast of the tramontana, rushing from the gorges of the Appenines, chills him in winter. Constantly exposed to danger, seeing his companions killed and wounded by his side, trained to rapid action, and with every faculty of mind and body on the alert, accustomed to dominate the rude forces of

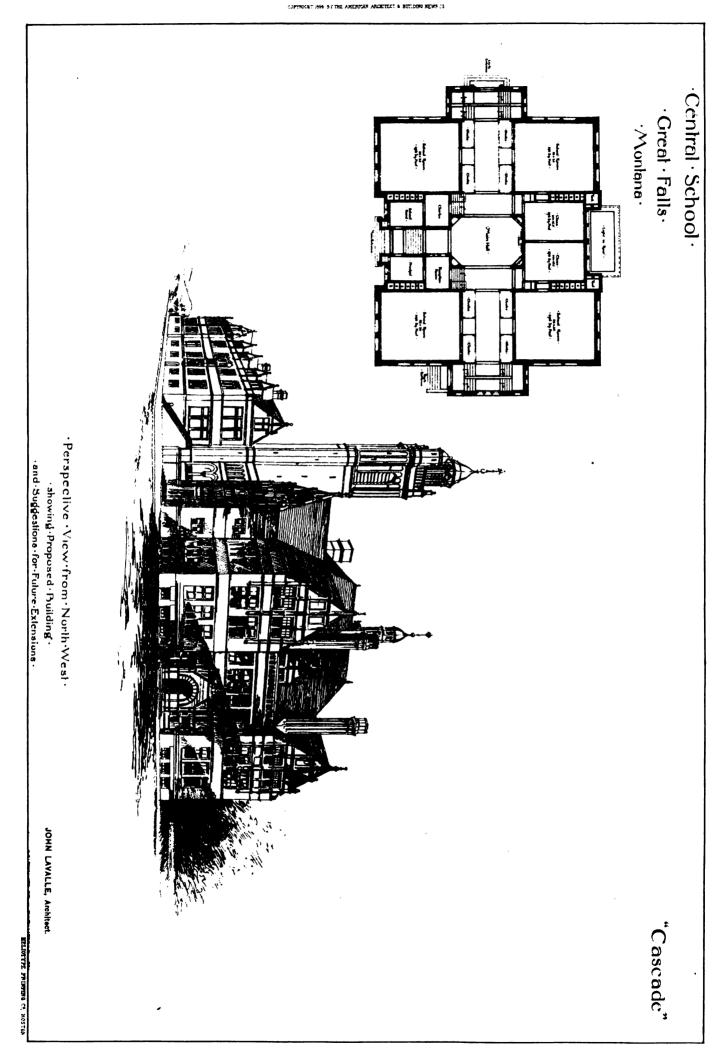


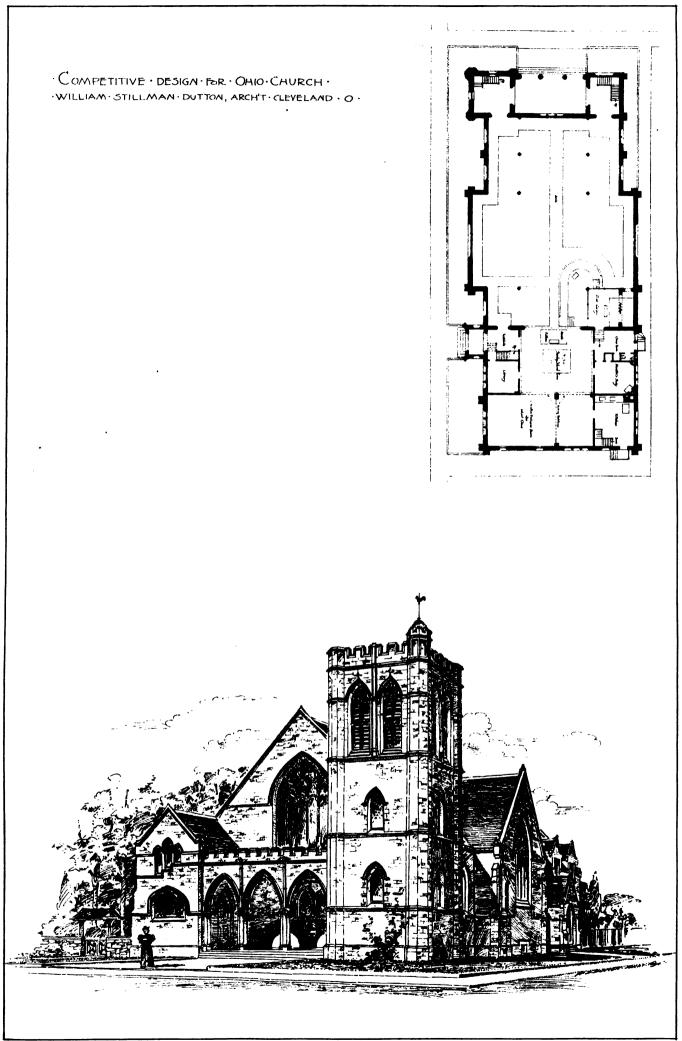


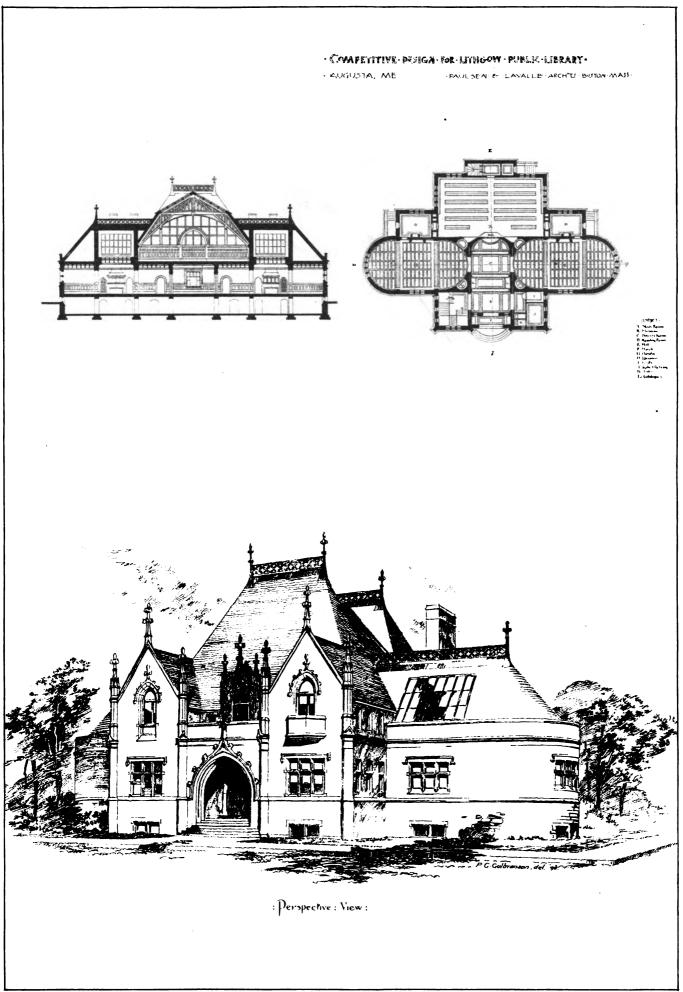


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SEPTEMBER 15, 1894.



SUMMARY: -

COMMUNICATION:

White Portland Cement. .

A Colonial House near Boston, Mass. — Trinity School Building, New York, N. Y. — Sketches of Italian Gothic Windows. — Old Willard Turnpike Toll-gate, Adams, Ind. — The Dwight House, Springfield, Mass. — The Porter House, Hadley, Mass. — Details of the Same.

Additional: Stable of E. F. Searles, Esq., Kellogg Terrace, Great Barrington, Mass. — A Villa in the Environs of Paris, France. — The Irish Village, World's Columbian Exhibition, Chicago, Ill. — "Wheatfield Lodge": The Galleries, Headingley, Yorkshire, Eng. — Billiard-room in the Same. — New Wesleyan Chapel, Hull, Eng.

TE have occasionally exposed ourselves to a good deal of earnest expostulation, on the ground that architects were artists, and engineers were something very different, by pointing out some of the advantages that the German architects enjoy through the practice, which is common in Germany of uniting architects and engineers in the local professional organizations. We have been told that German architects, in their professional societies, occupy an inferior position, as compared with their engineer associates, and that this would grate upon the feelings of American architects; but, however this may be, there is no doubt that the social position of architects in Germany is very high, perhaps higher than in any other country in Europe, and their association with engineers has unquestionably helped them to this position. Whether their artistic development has been hindered by this association is another We hold, ourselves, a very high opinion of the question. best German architects as artists, although the education of architects in Germany leans much more to the practical than the æsthetic side; but the social connection of architects and engineers does not necessarily involve any sacrifice of artistic aspirations on the part of the former. On the contrary, while no architect desires to do engineer's work, and, we hope, no engineer would undertake to do that legitimately belonging to an architect, no two sets of men are better qualified to understand each other's perplexities, and give mutual assistance; and, so far as regards their business relations with the public, their interests are almost absolutely the same. Engineers often act as contractors, which architects never do; but, apart from cases of this kind, both are men of science, in their own way; both have to assume heavy responsibilities toward people who have little comprehension of their work, and both suffer from the jealousy and malice of their common enemy, — the "practical man." In the greater part of our cities, the number of architects is so small as to count for almost nothing in influencing public opinion, and the engineers are hardly better off. It is true that the powerful National organizations of both professions will interfere, so far as they can, in cases of gross oppression; but this help is slow in coming; and, in default of any other means for calling public attention with effect to the rights which the two professions claim in common, there can hardly be any objection to their association, locally, for mutual support in matters of business, and such association would often be of great use.

As an instance of the way in which local associations of architects and engineers might be useful, we may mention the abomination of requiring architects and engineers entrusted with public work to furnish bonds for the completion of the work within the contract price, which is rapidly becoming popular. It is hardly necessary to say that no architect, and very few engineers, would have anything to do with work where this condition was stated at the outset; but the usual method is to hold a competition, without saying anything about it, and, after the competitors have spent a large amount of time and money on their designs, to offer one of them the work under such a stipulation, the alternative being the throwing out of his design, and the loss of all that it had cost him. It is already time for both architects and engineers to set their faces firmly against this degrading and unprofessional practice, and the two professions, which suffer about equally from it, could, by united action, accomplish much more against it than either profession could singly. It ought to be understood at once that no respectable architect or engineer in the United States will bind himself, by bond, contract or anything else, to do more than the common law requires of him; that is, to give skilful and conscientious service to his clients; and it should also be understood that any attempt to impose such a condition on any architect or engineer will be followed at once by a protest from all the respectable architects and engineers in the neighborhood. Such a protest, we may be well assured, would not fail of its effect; and the mutual acquaintance between architects and engineers incident to a struggle under the same banner for their common rights could not fail to be beneficial to both.

R. WYATT PAPWORTH, whose name will be grate-R. WYALL FARWORTH, whose mane will be fully remembered by students as the editor of the modern editions of Gwilt's "Cyclopædia of Architecture," and the author of most of the valuable new matter in it, as well as the editor of the great English " Dictionary of Architecture," recently completed, after being nearly twenty years in preparation, died recently in London. Soon after the completion of his labors on the "Dictionary," Mr. Papworth was appointed curator of the Soane Museum, and held this position until his death. In him, students, as well as architects, have lost an able and learned friend, whose immense resources of varied information were always at the service of the profession.

R. HENRY FAIJA, whose contributions to the knowl-R. HENRY FAIJA, whose continuous to see edge of cements and mortars have placed the profession of architecture, no less than that of engineering, under the big residence, near London. great obligations to him, died at his residence, near London, August 21. Mr. Faija was the son of a distinguished miniature painter, and was born in London in 1844. After finishing his school education, he was articled to a firm of ship-builders, and followed this pursuit for some years. He then abandoned it for general engineering, and opened an office in London. One of his first commissions was for the designing of cementworks, and, in carrying this out, he observed so many crudities and errors in the current practice of cement manufacture that he resolved to devote himself particularly to the improvement of this industry, and soon became widely known as an expert on the subject. He was called upon to build cement factories on the subject. He was called upon to build cement factories in North and South America, as well as in various parts of Europe, and was applied to as an expert on almost all matters connected with the manufacture and use of the material. Finding it necessary to systematize the tests which he was constantly called upon to make, he arranged regular testingrooms, both for chemical and physical investigation, which have been of great service to consumers, as well as manufacturers of cement. Naturally, in his chosen field he was preëminent among experts, and his name was constantly quoted in all engineering publications. He was an Honorary Associate of the Royal Institute of British Architects, as well as a member of nearly all the principal engineering societies, and Vice-President of the Society of Engineers.

E find in our foreign exchanges the detailed rules for the government of the Paris Exhibition of 1900, some of which are interesting. Among other things, space, water, gas, steam and motive power will be furnished gratuitously, the exhibitors having only to pay for putting in such

branches as they require from the main gas, water and steam pipes, and belting for the transmission of power from the main shafts to their machines. As usual in such cases, the Exhibition buildings will be made regular custom-house warehouses, and goods will be forwarded without delay at frontier custom-houses. Objects made in the Exhibition buildings, or within the Exhibition enclosure, will not be subject to any duty beyond what may be due on imported materials used in their fabrication. No work of art or other object exhibited is to be drawn, copied or reproduced in any way, without the express authority of the exhibitor, approved by the General Direction of the Exhibition; but the Commissioner-General can give authority for the reproduction of general views. This regulation is, of course, intended for the protection of exhibitors; and, with a similar view, patentable objects, which have not been patented, may be shown, without losing their right to a patent. The official catalogue will be in French, but any nation may publish in its own language a catalogue of its own Section, which, however, must be sold in the Exhibition grounds under the regulations of the Administration.

'N contrast with the politic practice of recent exhibitions, where all the numerous medals and diplomas have been of equal value, the recompenses of the Exhibition of 1900 will be of five classes. The highest class will consist in the Diploma of the Grand Prize; the second will be the Diploma of the Gold Medal; the third will be the Diploma of the Silver Medal; the fourth that of the Bronze Medal; and the fifth will be the Diploma of Honorable Mention. It will be seen, therefore, that the rewards offered are worth working for, and the result will probably be seen in unusual emulation. The juries of award will be divided into three groups. The total number of regular jurors is to be about one-sixtieth of the number of exhibitors, and substitute jurors are to be appointed, to the number of one-third the regular jurors. The French jurors are to be selected by the Commissioner-General, with the assistance of the Directors of the several Sections, from among persons who have acted as jurors, or have gained distinction as exhibitors, in other great exhibitions, or from the ranks of learned societies. The foreign jurors will be selected by the Commissioners of their respective countries. The class juries must have a French President, and foreign Vice-President. These juries will draw up lists of the exhibitors in their Section, with the recompenses which they consider due, and also lists of the workmen who have particularly distinguished themselves in the fabrication of the objects The lists of the class juries will be revised by the group juries, whose business it is to see that no class is omitted, and that no exhibitor obtains two recompenses for the same object; and the group juries report to the superior jury, which consists of the Presidents and Vice-Presidents of the group juries, the foreign Commissioners, and the principal French officials of the Exhibition. This jury announces the recompenses. All jury deliberations, of whatever degree, are to be rigorously secret; and it is hardly necessary to say that objects exhibited by any member of any jury, whether regular or substitute, are excluded from competition.

N experiment was tried not long ago, by the Department of Inspection of Buildings in Vienna, which has much interest for us. The object of the experiment was to try the efficacy of an enclosure of brick in defending iron against the effects of fire. A wrought-iron column, nearly twelve feet high, was made, consisting of two channels connected by lattice bars. This was set up in a small room, built with brick walls, and provided with chimneys, and, by means of levers, the column was put under compression. The column was then surrounded by a shell of common brick, four and one-half inches thick, laid in fire-clay mortar. No attempt was made to fill the shell in solidly around the ironwork; on the contrary, the hollow space was utilized to contain thirteen fusible mixtures, melting at temperatures varying from 65° to 900° Centigrade, as a test of the heat which might be developed in it. Various samples of stone, concrete and other materials were placed in the room, outside of the shell enclosing the pillar, or built into the exterior walls. The room was then filled with split fir-wood, and fire set, and the doors immediately walled up with slabs of plaster-of-Paris. After the fire had burned for two hours and a half, the doors were broken in, and a full

stream turned upon it from a fourteen horse-power steam fireengine. It was impossible, however, to cool down the room, so that the condition of things in it could be examined, before the next day. It was then found, by the testimony of fusible test-pieces left in the outer room, that the temperature there had exceeded 400° C, or 752° Fah. The walls of the outer room, which were of brick in Portland cement, retained there strength, but the natural stones had nearly all succumbed to the heat, although in different ways. The ceiling had been covered partly with plaster blocks, and partly with hollow terra-cotta tiles. Both of these had suffered. The terra-cotta tiles still held in place, but would not have borne any load, and the plaster-blocks, although they had resisted the fire well, were soaked and softened by the water, and, not being very strongly secured, fell soon afterwards. The enclosure of the iron pillar was still standing firm, although the corners of the bricks had shelled off to a depth of an inch or so, and the fireclay mortar was partly washed out of the joints, and a considerable number of bricks in the upper part of the structure were cracked, so that the water had penetrated entirely through them. On removing the brick shell, however, the iron pillar was found entirely uninjured. Even the paint was not scorched in the slightest degree, and the fusible test-pieces showed that the temperature had barely reached 65° Centigrade, or 149° Fahrenheit.

ACCORDING to the Kolnische Zeitung, the earthquakes which recently ravaged Greece, and particularly Attica, did not spare the precious remains of antiquity, and the Parthenon, particularly, is so badly damaged that another earthquake would probably destroy it, even if it is not already shattered beyond repair. On the north side, a piece more than two feet long was thrown out of a drum of the fourth exterior column. On the western front, the entablature of the inner order is badly damaged; and, on the northwest corner, a piece about two feet long has split away from the architrave between the first two columns. Worse than this, the columns at the entrance are so shattered that many fragments have fallen out, and the architrave is displaced, and appears ready to fall. The Government has given directions to secure the structure as quickly and thoroughly as possible, but, for this end, it will be necessary to put iron bands around the injured architraves and columns.

THE Sixth Annual Exhibition of the Art Club of Philadelphia will open to the public on Monday, November 19, and close December 16. Two gold medals are to be awarded, one for painting, and one for sculpture. Only original works, by living artists, which have not been publicly exhibited in Philadelphia, will be admitted, and sales will be attended to, on a commission of ten per cent, if a request is made to that effect, and the price is stated when the picture is sent in. Lists, which may be obtained, with other particulars, from the Secretary, Mr. H. T. Cariss, Art Club of Philadelphia, 220 South Broad Street, must be sent in before October 27.

PICTURE sales in England seem to be almost as much of a lottery as they are here. A short time ago two portraits, both genuine, and both by Sir Joshua Reynolds, were sold. One, known as the "Portrait of Lady Betty Delmé and her Children," brought eleven thousand guineas, or about fifty-seven thousand dollars, which is said to be the highest price ever paid at auction for a picture in England. Another Reynolds portrait, of "The Hon. Miss Monckton," brought seventy-five hundred guineas; while another was sold for fifteen hundred, and a fourth, at a different sale, for seven hundred. At the last sale, a Rubens, "The Prodigal Son," brought only eight hundred guineas, and a Guido Reni "Venus stealing Cupid's Bow," found no bona-fide bid at a thousand.

THE annual competition for the Prize of Rome in the Architectural Department of the Paris School of Fine-Arts has resulted in the award of the prize to M. Recoura, pupil of M. Pascal. M. Recoura has for several years been a very distinguished member of the School, his name appearing regularly among the winners of other honors. The first-second Grand Prize was awarded to M. Patouillard, pupil of M. Ginain, and the second-second Grand Prize to M. Héraud, pupil of M. Raulin.

COLONIAL ARCHITECTURE IN WESTERN MASSACHU-



Pyncheon Fort," Springfield, after a draw-ing in the Springfield Public Library.

N 1636 a small body of our Puritan ancestors, finding the country in the immediate neighborhood of Boston too thickly settled, the best building lots already occu-pied or appropriated and perhaps, too, the political and religious atmosphere a little trying, gathered to-gether themselves and such of their possessions as could be carried upon pack-horses and set out for the western wilderness. Beyond the straggling settlement of Watertown—then called Newton, they plunged into

The "Pyncheon Fort," Springfield, after a drawing in the Springfield Public Library lutely wild and trackless, save for an occasional Indian trail. They had learned by that time that there was little possibility of stumbling upon the northwest passage or of settling on the shore of the Pacific—though the charter of their colony granted them the right to do so—but beyond these general negative ideas, the tales of Indians, and the varying reports of their own hunters, they were as ignorant of their destination as the "Babes in the Wood."

After a time they reached the Connecticut Valley and there they dwelt, scattered up and down the river between Northampton and Weathersfield, Conn., building up during the remaining sixty years of the century a straggling line of towns nearly 100 miles in length. The growth of these towns and villages was slow. The distance from their base of supplies was great, severe winters and the failure of crops combined with the constant inroads of the Indians, retarded of crops combined with the constant inroads of the Indians, retarded development and immigration. For many years there was only a bridle-path to Boston and all merchandise had to make the long and perilous voyage around Cape Cod, through the Sound and the equally long voyage up the Connecticut.

The first settlement in the Connecticut Valley in Massachusetts was made in Springfield in 1636, and having the start in years and numbers the town grew rapidly and soon distanced its neighbors, becoming at last the leading compared lacentre of the western part

becoming at last the leading commercial centre of the western part of the State. Around it Longmeadow, Agawam, West Springfield, Hadley, Westfield, Southampton and Northampton, Hatfield, Deerfield and towns still farther north were slowly settled: some by immigrants from the eastern part of the State, some by wise men immigrants from the eastern part of the State, some by wise men from Connecticut who had prophetic instinct, and others by those of Springfield, who after a few years found their native town becoming too crowded, and saw in the tributary valleys and rich upland pastures of the parent river the promise of more abundant reward for the same amount of labor.

Hardly had the first of these valley settlements been established when the Indians, for the first two or three years friendly, suddenly took arms against the settlers and the war for mutual extermination began, an interminable struggle, barbarous on both sides, and one which would have exhausted the strength and patience of any people save our forefathers. Says Holland in his "History of Western Massachusetts": "From the first settlement at Springfield, until the Conquest of Canada in 1760, a series of one hundred and twenty-four years had passed away, and by far the larger part of this time the inhabitants of the territory embraced in old Hampshire had been exposed to the dangers, the fears, the toils and trials of Indian wars, or border depredations. Children had been born, had grown up to manhood, and descended to old age, knowing little or nothing of peace and tranquillity. Hundreds had been killed, and large numbers carried into captivity. Men, women and children had been butch-



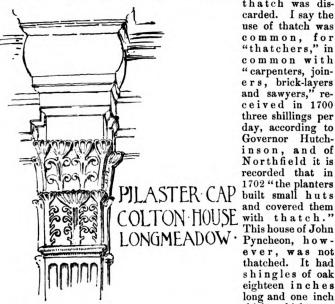
E. Blake House, 1760. Nathaniel Ely Tavern, 1667.

ered by scores. There is hardly a square acre, certainly not a square mile, in the Connecticut Valley, that has not been tracked by the flying feet of fear, resounded with the groan of the dying, drunk the blood of the dead, or served as the scene of toils made doubly toilsome by an apprehension of danger that never slept." And still

through all this the towns grew slowly, though not steadily. Spring-field was practically laid in ashes in 1675, Deerfield met the same fate twice, and a half-dozen of the other towns barely escaped, but always the inhabitants — when there were any left — went to work and built again. How Florence in the fourteenth and fifteenth centuries fighting Pope, Emperor, Duke, Free Company, friend and foe, burning and tearing down, visited by flood and famine, found time for the art and architecture which she has given to the world, and above all how she has preserved it, impresses every one who reads for the first time her history, and in this Connecticut Valley the wonder is not that there is so little Colonial architecture, but that there remains standing a single structure built before the eighteenth

Well, there are very few left. Still, until the early part of the present century there were a good many, and it is the march of improvement rather than that of violent destruction that has carried

There is little doubt, that from 1665 to 1675 Nathaniel Ely of Springfield kept a tavern in that town, in fact twice he was fined, once twelve pounds for selling four quarts of cider to Indians, and again forty shillings for not keeping his beer up to the standard strength; and this tavern of his still stands, hemmed in by brick blocks—perhaps not in its original form, but, likely, very near it, for blocks — perhaps not in its original form, but, likely, very near it, for the earliest houses in this region had undoubtedly steep gable roofs, as this has still. The "Pyncheon Fort," built by the first John Pyncheon in 1660, which stood until 1831, had the same steep gables, if a wash-drawing made by the Rev. W. B. O. Peabody, one of the early Unitarian ministers of Springfield, is correct. In Hadley, in 1700, it was voted that the new meeting-house have a "flattish" As this was a thirty-degree roof, it is reasonable to suppose that the majority of roofs already built were steeper. Then, too, the use of thatch being common, a steep roof was a necessity and it would be strange if the steep roof did not remain in fashion after



thatch was discarded. I say the use of thatch was common, for "thatchers," in common with "carpenters, joiners, brick-layers and sawyers," re-ceived in 1700 three shillings per day, according to Governor Hutchinson, and of Northfield it is recorded that in 1702 "the planters built small huts ever, was not thatched. It had shingles of oak eighteen inches long and one inch

long and one inch thick which cost twenty shillings per thousand. In 1667, by the by, this same J. Pyncheon sold pine boards of good quality at his Springfield saw-mill at four shillings sixpence per hundred feet.

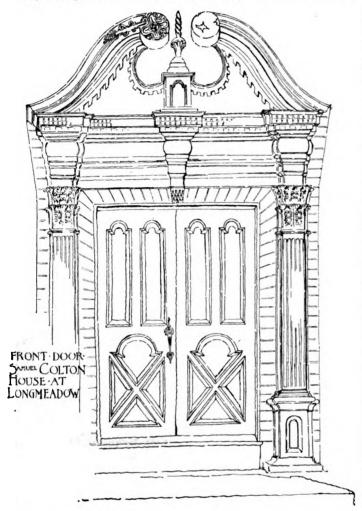
Besides the Ely Tavern in Springfield, I know of no seventeenth-century building in the Connecticut Valley which bears any great resemblance to its original form. Early in the eighteenth century, however, labor and materials had become plenty enough to afford larger and more substantial houses, and many of these, very slightly changed, if at all, stand now. As a general rule, they are nearly all of the same type, varying slightly on closer examination.

It is with this class and type of house that I suppose, rightly or wrongly, the general interest in "colonial" architecture begins. That is, it is in this first decade of the eighteenth century that certain houses began to display more or less applied ornament, designed, most of it, from a varyingly distinct recollection of the latest style in England (or perhaps Boston) interpreted in wood by

latest style in England (or perhaps Boston) interpreted in wood by local geniuses with what simple tools they possessed. In nearly all cases the result was bad, but I do not know that it is less interesting on that account. Take, for instance, the entrance of Samuel Colton's house in Longmeadow. The house was built about 1740. It is clear that the builder, the carpenter and architect, who were undoubtedly the same, designed and executed as carefully as might undoubtedly the same, designed and executed as carefully as might be the really elaborate work about the door: every moulding has been worked by hand; the frieze moulds, the flat dentils of the pediment cornice barely raised above the panelling, the raised and bevelled panels of the door, and the carefully-drawn radial-lines between the door and the pilasters; while the carved capitals and the decorated rosette with its bunch of grapes attached, the latter being in cast-iron, bespeak a man with a feeling for the beautiful, his vision a little befogged, perhaps, but his intention good. In these pilaster-caps did the designer intend to represent as best be could Corinthian capitals, of which, no doubt, he had seen pictures? Surely, if he did, he must have been a direct descendant of those Lombard-Byzantine artists and sculptors of the eleventh century who wrought in North Italy six hundred years before.

I have remarked above that these houses remaining to us from

the Colonial period (I use the word Colonial here in an historical sense,) are all of the same type. The same may be said of the towns themselves. All of the Colonial Connecticut-Valley towns, with the single exception of Northampton, were laid out on the same with the single exception of Northampton, were laid out on the same plan: the single street, often over three hundred feet wide, with a "common" running through the centre on which the church generally stood. On either side of the street stood the houses, always with eaves to the street; the lots on which they were placed were comparatively narrow, and behind the house, at right angles to the street, ran a straggling line of barns and out-houses, — on one side of the street towards the river, which, in general, was a short half-mile or less away, on the other to the swamp or the foot-hills of the valley, where each family dwelling on the street had its pasture, its wood land or its grass-land; and to this day the great majority of these towns are unchanged in their plans, many of the original "home lots" being still owned by the direct descendants of those to whom they were granted in the seventeenth century. In the little town of



Deerfield, there are twelve of these estates, and the average age of the houses on them is about one hundred forty-three years.

The house built in Hatfield, by Samuel Porter, in 1713, is a good example of this better class of houses. The plan was a simple one, two rooms on the first floor, with the chimney and entry between them, the chimney being the larger; up stairs, four rooms. At the rear was a one-story addition, which long ago fell away, to be replaced by another.

Why the second story overhangs the first on the front by four or

five inches, I do not know. I can find no constructional reason for it. It certainly could not have served, as did the greater overhang on earlier buildings, as a convenient vantage-point for shooting Indians, though the house was built in the darkest period of the French and Indian wars. The clapboards are split and shaved with their edges moulded. The front door is practically a double door made up of the ordinary panel door backed by a batten door on the inside, the whole being three inches thick. Despite the scarcity of pine of which the records of that time often complain, all the interior partitions are solid and panelled in wood, and there is panelled wainscot everywhere, the width of the panels testifying to the scant respect paid to the provision in the Colonial charter which reserved all trees over twenty-four inches in diameter for the use of the Royal navy. The extent of wood panelling was brought to our notice by the present dweller in the house by the eminently practical

observation that the room took forty yards of carpeting and only two double rolls of wall-paper. All of this detail: panels, mouldings, two double rolls of wall-paper. All of this detail: panels, mouldings, wainscot-caps, stair-rails and balusters are of the simplest sort, rather heavy and perhaps clumsy, but evidently local work. It is a significant fact that in the year that this house was built, the town-meeting, of which this Samuel Porter was the moderator, voted to build its new meeting-house, the one with the aforesaid "flattish" roof, and the committee voted to "buy glass, nails, and other necessaries, lay out work by getting clapboards, shingles, etc., hire workmen, improving our own inhabitants as much as may be, and levelling all the work at money price." Is it possible that the moderator may have found it convenient to build his house at the same time, and perhaps get a little better price on his own work?

things have been done in later days. There are a good many of these old houses very like the Porter house, in fact, almost identical with it in plan and detail, scattered up and down the valley. As the years of the century increased, the size of the houses increased also, and while the length of the house on the street was kept about the same, the two rooms on the first floor were increased to four, making the house much deeper. Then began to be built the gambrel-roof houses of which the old Josiah Dwight house [See Illustrations], still standing in Springfield, is as good an example, probably, as we have left to us. This was built about 1764 and outwardly is, in general, as it was one hundred and thirty years ago. There is a little more elaboration of detail about the windows and doors and the cornice, but the doorway is very like that of the Porter house in Hadley, like the Colton house in Long-meadow, and, in fact, like fifty other houses in the neighborhood. Here are the same wrought clapboards with their moulded edges, and the same pineapple in the centre of the broken pediment above the doorway, the same indication of a flat arch above the door-opening, and almost exactly the same doors themselves. Inside, the house has been so completely torn to pieces and remodelled, that only a few of the rooms retain their original shape, and instead of a score of representatives of one family, the representatives of scores of families, and possibly as many nationalities, now dwell there. Up to the close of the Revolutionary War this type of house, beginning with the narrower house, and gradually increasing in size with the change from the simple gable roof to the gambrel roof seems to have been the prevailing plan all through this section of the country, and examples of it might be multiplied almost indefinitely, but it would amount to hardly more than a vain repetition. People were then, probably, pretty much the same as they are now: the recognized leader in a financial and social way, built himself a house, and his friends and his enemies followed as closely as they could in his footsteps. Until the War of the Revolution, there was little, if any, diversity of opinion as to who these leaders were.

G. C. GARDNER.



Tombstone at Hatfield, Mass.

THE PROBLEM OF WASTE.

E pride ourselves, in this so-called practical age, on having reduced waste to an approximate minimum. The claim may have some basis of fact in regard to materials; but in regard to the application of productive energy, it certainly has a very unsubstantial foundation. By productive energy, I mean, in this case, human labor which, if intelligently directed and applied, would produce results of money value to the community. When labor is so misapplied as not to produce such results, waste is certainly a mild term by which to characterize the outcome. For the purposes of this article all considerations are ignored in the computations except those which may be reckoned in dollars and cents, though there are ethical considerations of supreme importance involved. A limited space will, however, permit of only a bare mention of the moral bearings of the facts deduced.

Ever since the announcement was made that the commissioners having in charge the erection of a capitol for the State of Washington had received one hundred and eighty-eight sets of competitive plans, the thought has very frequently recurred, and always with added force, "Nearly one hundred thousand dollars wasted." added force, "Nearly one hundred thousand dollars wasted." The insistence of this thought has led to the working-out of a statement, in topical form, of the probable average waste of time and

labor on a building, the cost of which is about a million dollars, when erected under our present system of competition. The statements of values are intended to be safely conservative in all cases and will, it is believed, be found to be far too low when travelling and other expenses and expenditure of time are taken into consideration. The estimate is carried only so far as to include the first series of sub-contractors, though extremely suggestive of how far-reaching and inclusive is the effect of the system. Even at this early stage of the analysis we find the waste aggregating \$110,400, or more than eleven per cent of the cost of the work. To follow out one line of dealings from beginning to end may give a mild suggestion of the enormity of the system when traced into all its varied ramifications.

The persons having in charge the erection of such a building as

has been indicated, after agreeing on certain data, advertise for competitive plans, specifications and approximate estimates, sending to each architect, who desires to compete, certain printed instructions, plans of lot and other necessary data. For the Washington Capitol one hundred and eighty-eight sets of plans were submitted, one of which, it is presumed was accepted. So far as the other one hundred and eighty-seven were concerned, the time and money spent in perfecting them were practically wasted. It may be suggested that there are incidental advantages which gar to offset this corpoditive of time and money such for instance as the suggested that there are incidental advantages which go far to offset this expenditure of time and money, such, for instance, as the practice gained by working-out a practical problem on a large scale, the prestige secured by possible favorable mention in connection with the competition, and possibly others. But on the other hand, it could scarcely be considered wise or judicious policy to place the erection of important buildings or the expenditure of large amounts of public or private funds in the hands of those who were convenient. of public or private funds in the hands of those who were very much lacking in these two points, and under a better system these factors could easily be eliminated.

Allowing the very moderate price of \$500 as the average cost of Allowing the very moderate price of \$500 as the average cost of the one hundred and eighty-seven sets means the very considerable total loss of \$93,500. (On the New York Municipal Buildings one hundred and thirty sets of plans were submitted, costing on an average not less than \$1,000, making in all \$130,000, equivalent to a five per cent commission on \$2,600,000-worth of work.) Each of the one hundred and eighty-seven plans is accompanied by an approximate estimate, the making of which should not cost less than \$50 and heavy \$2,850 in all

\$50 each, or \$9,350 in all.

The architect having been selected and the plans sufficiently far advanced, advertisements are sent out for competitive bids. One thousand dollars would probably be not more than enough to cover the cost of the two series of advertisements. Suppose that twentyfive unsuccessful bids costing \$200 each, or a total of \$5,000, are received. The successful contractor having been selected, the time has now arrived for the actual beginning of the structure and the amount of waste as expressed in money value is \$108,850.

APPROXIMATE ESTIMATE OF WASTE OF TIME AND ENERGY ON A \$1,000,000 BUILDING FROM THE TIME IT IS PUT INTO THE HANDS OF COMMISSIONERS.

PRIMARY SOURCES OF WASTE.		SECONDARY SOURCES.			
I. Advertising for com- petitive plans and estimates.	\$1,000	After the contract is awarded, the principal contractor would usually obtain sub-estimates somewhat as follows: The sub-contractor, having to secure materials, probably gets from one to a dozen estimates on many sub-divisions, and so on ad infinitum.			
II. 187 Sets of plans @ \$500	93,500	Amount brought forward \$108, 1. Excavation and grading 5 esti- mates @ \$5 2. Foundations 3. Cut-tone			50 50
III. 187 Approximate estimates @ \$50	9 ,3 50	4. Brickwork 5. Terra-cotta 6. Marble (interior) 7. Tiling 8. Asphalt 9. Plastering	100 25 25 50 50 50 150	18. Glazing	50 59 50 50 50 50 50
IV. 25 Bona-fide Bids @ \$200	5,0 00	12. Iron	50 50 50	25. Hardware 26. Chandellers	50 50 50 50

The principal contractor generally sublets the work in comparatively small parts, somewhat as suggested by the table. Suppose six carpenters each spend \$20-worth of time in figuring his special part of the work. One gets the contract and \$100-worth of labor is wasted. The carpenter needs inside finish. He goes to several mill-men, or, what amounts to the same thing, they come to him, and gets estimates on the cost. One wins the job; the others lose their time. The mill-man gets prices from several lumber-jobbers, the lumber-jobber is periodically approached by the agents of the wholesale lumber-dealer, the wholesaler deals with the saw-mills, the sawmill men with competing loggers. Similar sequences apply in all the other departments. The carpenter needs nails. A dozen, more or less, hardware dealers spend hours in trying to sell them to him. The retailer buys of the jobber, the jobber of the wholesaler, he of the manufacturer, the manufacturer buys his iron plates of the jobber, the jobber of the manufacturer buys it in

bars, the dealer in bars buys it in pigs, the dealer in pigs buys it in ore. If, perchance, the logger or the miner gets rich, he goes to three or four architects for "sketches" and again is the weary grist of waste ground out. And the "system" works the same in every other kind of business. Is it any wonder that ninety-five per cent of all business enterprises fail? The marvel is that even the small remainder succeed.

The question naturally suggests itself, who pays for all this waste? The answer is very simple: you, good friend, and I. If the architect enters into competitions which prove unsuccessful, he must get tect enters into competitions which prove unsuccessful, he must get from his paying clients enough to make up for his loss of time and money, or in the end he must fail. The builder must make enough out of the work he actually performs, to pay, first, for losses on work taken at too low a price, second, for the losses sustained through the failures of others to meet their obligations to him, third, for the expense of making a great many useless estimates, fourth, for the general expenses of carrying on his business, or he, too, must fail. And similarly with every man engaged in business. But who pays? Every honest man, who is able to pay his debts, pays his proportion toward keeping up this reckless, unscientific, unpractical way of doing things which we dignify by the name of "system." It is systematic robbery, and none the less so because it is apparently voluntary. Yielding up one's money with a pistol at the head or a dagger at the heart is just as voluntary. Compete or starve is the dictum and in many cases it comes pretty near to or starve is the dictum and in many cases it comes pretty near to being compete and starve.

One word now concerning the ethical points hinted at above. First, the desire of securing the commission offers a temptation, generally irresistible, for the architect to make his plans so as to catch the committee's favorable consideration without too much regard for cost and other minor details. This involves, second, the forcible adjustment of the so-called approximate estimate to conform to the known appropriation for the erection of the building. In other words, he presents a statement which he knows to be untrue. To such an extent has this been carried that an approximate estimate, if asked for at all, carries with it almost no influence in affecting the decision of a committee. Third, the contractor's anxiety to secure the work influences him to submit estimates far too low to enable him to perform his work in accordance with the terms of the contract. In order to protect himself from loss he feels obliged to vary from his agreement, to the detriment of the building, obliged to vary from his agreement, to the detriment of the building, wherever he can do so without discovery. In plain, unvarnished language, he steals from the quality of the work. Fourth, the generally accepted belief in the susceptibility of committees to illegitimate influences aggregated under the comprehensive word "pull," local, political, or mercenary. Fifth, a suspicion, amounting in some cases to knowledge, that the committee is not above selecting points of excellence from the rejected plans and incorporating them in the accepted ones without credit or recompense to the originator. These and other kindred abuses are the legitimate outgrowth of competition in any and every line of business. Does it not seem as if the system was simply a series of premiums offered it not seem as if the system was simply a series of premiums offered to foster selfishness, dishonesty and corruption? It certainly could not well be more ingeniously arranged, or operate more effectively, to produce such results, and it is only because of a divine substratum rebellion against so un Christian a system that it has not wrought more widespread havoc and desolation.

No allusion has been made to what may be termed incidental exenses, such as the maintenance of builder's associations, news bureaus, and the like, items of considerable importance in view of the fact that the honest purchaser pays for them ultimately. The facts may not be so difficult to establish, but wherein lies the

remedy? Lack of space forbids the present discussion of that point. Rest assured that, when there is a sufficient realization of the defilement of the Augean stable, a Hercules will be raised up to turn into it the cleansing and purifying rivers of unity and intelligent cooperation.

WARREN A. RODMAN. cooperation1.

CRACKS AND SETTLEMENTS.

REW buildings of any magnitude are quite free from cracks and settlements. It is often a matter of the utmost importance to ascertain their cause. The architect naturally desires to do so in every case, that he may guard against them for the future. The owner has an interest in finding it out, that he may prevent the injury from going farther. The builder naturally wishes to clear himself, if he has been unjustly blamed for the defects that have appeared in his building; and the outsider, if, by chance, the evil seems chargeable to outside interference, is equally anxious to show that it is not of his making. Amongst all these conflicting interests the facts are often in danger of being misinterpreted, for there are very few failures of this class which do not at first sight seem capa ble of more than one explanation. A great number of small details may have to be ascertained and balanced one against the other, before one theory is conclusively proved to be true and another to be false; so that the first need in these inquiries is to avoid jumping to a conclusion, and to keep a fair and open mind.

We will begin with cracks traceable to the foundations. Firm,

¹Since writing the above, the agent of a marble company has told me that \$300 would not pay for the actual expense to which they had been put in figuring and refiguring a single job in this city. Other testimony of a similar character is abundant. W. A. R.

undisturbed earth will safely bear from one to two tons per superficial foot. Clay, if covered up from rain and sunshine, will carry ncial foot. Clay, it covered up from rain and sunshine, will carry from three to four, or even five tons per foot, and hard, compact gravel considerably more. If greater weights are put on these substances respectively, the superstructure will sink, and as the pressure is likely to differ at different points, it will probably sink unequally. The more unequally it sinks, the worse it will crack, and this will happen, too, when a small part of the soil is softer than the bulk of it, and almost as much when a small part is harder. This is why pieces of old footings and concrete, which may be met with in digging out the trenches for a new building, should be removed and not made use of. Having long been subjected to pressure, the probability is that they would sink or settle less than the concrete or footings of the new work, and cracks in the walls above would

appear on each side of them. The clay that will carry most weight is a stone clay, or a mixture in different proportions of clay and gravel. In some places, for instance, in the Essex district to the north of London, there is a good deal of what may rather be called "shaly" clay. It is free from stones and tends to split into horizontal flakes or laminæ, with a smooth, soapy surface. While this clay is protected from the weather, as it is, for instance, below the inner walls of a building, it will safely carry a great weight, provided always that it cannot escape laterally at a lower level. But once let a trench be dug, even at a distance of many feet, and these soapy, slippery flakes will begin, by degrees, to slide towards it. If the trench is wet, the process goes on faster. The flakes, as they reach the damp part, break into smaller and smaller fragments, and finally melt into mud. Each particle which does so, makes room for another particle behind to take its place, and so, in time, a sinking or sliding of the clay takes place at an angle so slight that any movement in it would at first seem quite impossible. "You have no need to plough your fields here," said a London architect to an inhabitant, after his first experiences with this shaly clay; "you only need to take off the grass and cut shallow trenches a dozen yards apart, and the fields would plough themselves.

It is quite otherwise with the stony clays of London. Their tendency to slip is incomparably less. Even if they had a tendency to lamination, the pebbles they contain would bind the beds together. But, apart from this, they are of a firmer, more coherent nature. is of these, and such as these, that the text-books speak when they state that the angle of repose in clay—the steepest slope which it can permanently be made to keep—is one of about 40°. There is plenty of shaly clay which, even while fairly dry, could hardly be trusted to keep half as steep a slope, and which, when wet, would soon spread itself out into a horizontal mass.

Failures in rock foundations, if uncommon, are difficult to guard against. The rock, at the level of the footings, may all be equally sound and equally hard, and yet, at a little distance beneath, fissures and cavities may exist which no one knows of. Our readers may remember, three or four years ago, the unaccountable fall of the central tower at Barmouth new church. The tower was by no means lofty, the span of the tower-arches was only moderate. They had, to all appearance, ample abutment, and the rock on which the building stood was of the hardest description. But an artificial terrace had been cut out in the mountain-side to receive the structure, and this terrace was afterwards enlarged by blasting. It seemed probable that either in its formation or its enlargement, the rock foundation had been shattered: unless, indeed, the shaking caused by the explosions had acted directly on the recently-built work of

the tower and its supports, and so caused the calamity.

Settlements may be produced from bad concrete or imperfectly-built footings. Some builders seem to think that any sort of bricks, from shuffs to clinkers, are good enough to go underground. it is obviously true that color here is of no consequence. As far as that goes, the bricks may as well be black as white, or red. But it happens that in a London brick clamp, the dark or vitrified bricks are almost always the bent or twisted ones: and a bent brick will break and settle with a very little pressure on the top of it. Some mysterious settlements may perhaps be explained by remembering this obvious fact. When the concrete in a foundation fails, it is generally through carelessness in mixing, or badness in the materials. Concrete properly made with one part of the best Portland cement to two of sand, and six of clean beach shingle, will require thirty tons per superficial foot to crush it when three months old; but if imperfectly mixed, or not entirely free from loam or dirt, it will give way with a small fraction of this weight. So it will, if the cement is allowed to set and is then "knocked up" again with water; but this fault, from the nature of the case, is rarer in concrete than in brickwork.

A common evil is the building of brick arches and brick piers with soft rubbers. The architect is tempted to employ them from the ease with which they can be cut to shape; but in features which bear a heavy load, this softness is really a drawback, and not a recommendation. The builder of the last generation rejoiced in his camber arches of malm stocks, and in thousands of cases these arches have cracked and allowed the superstructure to settle. The modern architect is fond of using orange-red rubbers in similar positions, and time may, probably, show that he does it with a similar result. At any rate, such bricks should not be trusted to where the load is heavy. The piers should have in addition a solid core, and the arches a sufficient quantity of half-brick rings above

or behind those of the weaker material; and this suggests another way in which unsightly cracks arise. A facing of gauged work with fine joints is commonly attached to a backing of ordinary brickwork, which has comparatively thick beds of mortar. After a time, the which has comparatively thick beds of mortar. After a time, the mortar in the backing gets compressed, and in a height of ten or twenty feet, the work sinks perhaps a quarter or half an inch. Now if it stood alone, this would matter little; but the facing is attached to it, and this facing, having thin beds, scarcely sinks at all. Yet, the weight behind must pull it down, and as it cannot come down in a plane face, it bulges and cracks. The same thing happens with stone quoins or stone jambs bonded into brick walls. The joints of the strangers are not only finer but fower than these of the bricks. the stone are not only finer, but fewer than those of the bricks: hence, the latter settle down, and the stone has to bear all sorts of irregular strains.

Columns are liable to crack from many causes. We have known all the nave piers of a new church to fail for want of a simple calculation as to what weight was coming on them, and how much they would safely carry. In this case, they were of Corsham stone, which cannot be trusted with more than 1 cent. on the square inch as a permanent load. Had they been of hard York, which will safely bear 6 or 8cwt. on the same area, they might be still remaining. The London contractor thinks nothing equal to Portland stone; but this, as to many of its qualities, is a mere superstition, and it is especially so as to its resistance to crushing. Corsham stone will bear a little more than Box Ground, Caen a little more than Corsham, and Portland a little more than Caen, but none of them have half the strength of the North of England sandstones. Columns, have a from fail through faults connected with their bedding however, more often fail through faults connected with their bedding than through the actual weakness of their material. We once found a foreman of the old school packing up the space between the foundation of a great tower-pier and the pier itself with bits of broken brick, slate and tile! This pier had three hundred tons to carry, and though it did not fail, because the foreman's method of jointing was discovered and amended in time, mysterious settlements appeared in other places, and were found to be the result of similar Hollow beds are a notorious cause of unsightly cracks in practices. The beds of stonework should be perfectly true and square; but if there must be an error, let it lean to virtue's side — or, in other words, let the beds be almost inperceptibly convex. The slightest hollowness throws the weight on the edges of the stone, and the upshot is that these edges, or some of them, flake off. We have a well-known instance in the granite piers in Farrington Street, which support the Holborn Viaduct.

which support the Holborn Viaduct.

Cracks due to insufficient abutment for important arches are serious. But it is surprising to see how an arch will sometimes adapt itself to the weight it has to carry, losing, indeed, its original form, and most of its beauty, but fitting itself for, and actually doing, the work laid upon it. The great tower arch at Newark will recur to the mind of everyone who knows it, as an illustration of what we mean. It has changed supprisingly from its original Cothic what we mean. It has changed surprisingly from its original Gothic shape, having even become lop-sided from unequal pressure. Yet it has stood safely for centuries, and may stand for centuries more. The old church at Grosmont, skilfully restored by Mr. J. P. Seddon many years ago, showed another case of insufficient abutment. Here the strain from below the central tower, in the course of ages, had pushed the long row of nave piers much out of the upright, and even threatened to overturn the western wall. But the cracks which are traceable round central towers in many of our cathedrals arise traceable round central towers in many of our cathedrals arise rather from unequal sinking of walls than from want of resistance to the tower arches. Norwich, in spite of its lofty spire, is remarkably free from them. Examples, however, are easily found, and in most of them the origin of the evil is the great difference in weight between the central tower and the walls which surround it.

It may seem at first that a cause which affects a great cathedral tower cannot much concern us, who are not likely to have cathedrals to build. But this cause is also one of the comproset of these which

to build. But this cause is also one of the commonest of those which produce cracks and settlements in smaller buildings. Wherever a produce cracks and settlements in smaller buildings. Wherever a low porch comes out from a high wall, or a low wing from a higher building, there is liable to be a crack at the junction from unequal sinking. We do not mean by this, unequal sinking into the ground on which the building stands. If the area of the concrete is evenly proportioned to the weight on it, a sinking of this sort will not occur. But cracks and settlements may still appear, as they very often do, in such a place. The cause of them, as of some others we have noticed, ultimately lies in the mortar-joints. If a house is fifty feet high, and its projecting porch only ten feet high, there will be a pressure on the mortar beds of the house-wall where it joins the porch of perhaps two or three tons per foot super.; while on those of the porch-wall, which bonds into it, there will be hardly any pressure worth mentioning. The result is that the house-wall sinks down slightly, while the porch-wall does not; and so the bricks which bond the one to the other get cracked across. A similar cause brings about, or is liable to bring about, the same result in all sorts of places where any part of a building, with great weight on it, is fixed to another which carries little weight. A good plan is to build the heavy part first, and let it get its sinking proportioned to the weight on it, a sinking of this sort will not occur. great weight on it, is fixed to another which carries little weight. A good plan is to build the heavy part first, and let it get its sinking done, before the light part is attached to it; and another way is to connect the two, not by bonding bricks, but by a chase, so as to allow of some vertical movement. Bonding can then be effected by wrought-iron ties, which will bend and not break.

Settlements of walling from shrinkage of timbers or decay of timbers belong, as a rule, to second-rate or third-rate work. Brick-

work should not rest on plates built into the wall; and lintels should work should not rest on plates built into the wall; and lines should have discharging arches over them. We have said nothing of the mode of building which brought down the tower of Chichester Cathedral, and threatened that of Peterborough, because the making up of vast columns out of a shell of ashlar and a core of worthless rubble is not practised in the present century, even by our friend, the jerry builder — Building News the jerry builder. — Building News.



THE CHICAGO ARCHITECTURAL SKETCH CLUB.

HE Sixth Annual Competition for the Robert Clark Testimonial, under the auspices of the Chicago Architectural Sketch Club of Chicago, will be held under the following conditions:

The competition is open to architectural draughtsmen under thirty years of age, residents of the United States, and not practicity architectural draughtsmen.

tising architects.

The author of each design must execute all drawings without assistance, and non-adherence to these conditions will cause the

assistance, and non-adherence to these conditions will cause the rejection of the design or designs in question.

The awards will be made by the Adjudicating Committee on the "Robert Clark Testimonial" competition and are: First Prize, Gold Medal; Second Prize, Silver Medal; Third Prize, Bronze Medal.

Those designs receiving Honorable Mention will receive special Bronze Medals.

Bronze Medals.

The prize-drawings are to become the property of the Chicago Architectural Sketch Club.

PROGRAMME.

A design for the façade of an "Art Club" House in Classic or Renaissance style, the building to be situated on a residence

The building shall be 80 feet in width, situated on a lot 100 feet in width and at a distance of 25 feet from the inside line of the sidewalk. The lot is not situated on a corner, and little or no attention is to be paid to the sides of the building, beyond indicating the proper return of the cornice, etc., in the perspective.

The rooms which require expression and which take their light from this front are: First story, — an entrance located in the centre and a single room on either side, to be used as reception and reading rooms. Second story — a large banquet hall located in the centre

rooms; Second story, — a large banquet hall located in the centre, and a small unimportant room on either side, which can be lighted from the front or from the sides at the discretion of the competitor; Third story, - the third story is devoted to bed-rooms, to be arranged

at will.

The drawings required are: an elevation, at a scale of one-fourth of an inch to a foot, rendered in line with pen-and-ink without shadows or other embellishments, and a perspective rendered at will. They are to be mounted upon stretchers or heavy card-board 29" x 40", and must be marked with a device or nom de plume. An envelope marked in a similar manner, and containing the name and

accompany each design.

Drawings must be delivered to John Robert Dillon, Secretary, Chicago Architectural Sketch Club, at the Club House, 274 Michigan Avenue, Chicago, on or before Thursday, November 15, 1894, charges to be prepaid. All drawings not receiving prizes will be

returned at the expense of the contributor.

The Adjudicating Committee on the "Robert Clark Testimonial":

W. B. Mundie, Chairman. Frank L. Wright. Irving K. Pond.

THE NEW YORK SKETCH CLUB.

The regular monthly meeting and dinner of the New York Sketch Club was held at the club-rooms, Saturday, September 8. About thirty-five members were present. President E. A. Josselyn occupied the chair. Mr. Ernest Flagg, who was the guest of the Club, spoke interestingly on the methods of the "Beaux Arts" and the advantages of a thorough education for architects. Mr. Frank Hays and Louis Hickman of the Philadelphia T-Square Club were introduced. Mr. Hickman spoke of the advance made in the pro-Hays and Louis Hickman of the Philadelphia 1-Square Club were introduced. Mr. Hickman spoke of the advance made in the project of competitions between Sketch Clubs. The President announced that a programme would be issued this month of the above competitions. Also that Mr. Flagg's studio would open this month and that it would be free this term. Mr. Clarence A. Fullerton was elected Chairman of the House Committee to succeed Mr. Pollard, resigned. H. C. PITTMAN, Recording Secretary.

CLAPBOARD. — The name "clapboard" for a narrow board used to cover the sides of houses has been supposed to be an Americanism, but it was brought to this country by the early English colonist. According to very old dictionaries published in England, clapboards were thin boards formed for the manufacture of casks. They were originally cloveboards, because they were "cloven" by hand. In course of time, the word was abbreviated to cloboards, claboards and clapboards. — Exchange.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

A COLONIAL HOUSE NEAR BOSTON, MASS. MR. JAMES T. KELLEY, ARCHITECT, BOSTON, MASS.

[Gelatine Print, issued with the International and Imperial Editions only.]

TRINITY SCHOOL BUILDING, 91ST STREET, NEW YORK, N. Y. MR. CHARLES C. HAIGHT, ARCHITECT, NEW YORK, N. Y.

SKETCHES OF ITALIAN GOTHIC WINDOWS BY MR. J. W. CASE, LATE HOLDER OF THE ROTCH TRAVELLING-SCHOLARSHIP.

OLD WILLARD TURNPIKE TOLL-GATE, ADAMS, IND. SKETCHED BY MR. T. OSBORNE, INDIANAPOLIS, IND.

THE DWIGHT HOUSE, SPRINGFIELD, MASS. SKETCHED BY MR. G. C. GARDNER, ARCHITECT, SPRINGFIELD, MASS.

SEE article elsewhere in this issue.

THE PORTER HOUSE, HADLEY, MASS. MEASURED AND DRAWN BY MR. G. C. GARDNER, ARCHITECT, SPRINGFIELD, MASS.

DETAILS OF THE SAME.

[Additional Illustrations in the International Edition.]

STABLE OF E. F. SEARLES, ESQ., KELLOGG TERRACE, GREAT BARRINGTON, MASS. [Copper-plate Etching.]

A VILLA IN THE ENVIRONS OF PARIS, FRANCE. MR. E. LEMAIRE, ARCHITECT.

[Copper-plate Etching.]

THE IRISH VILLAGE, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL.

[Gelatine Print.]

"WHEATFIELD LODGE," HEADINGLEY, YORKSHIRE, ENG.: THE GALLERIES. MR. T. BUTLER WILSON, ARCHITECT.

BILLIARD-ROOM OF THE SAME.

NEW WESLEYAN CHAPEL, ARGYLE STREET, HULL, ENG.

This building, which is now in course of erection on a site in Argyle Street, Hull, is in the Waltham Street Circuit. The chapel The chapel is designed in a free Romanesque style, and will be built of bricks, is designed in a free Komanesque style, and will be built of bricks, faced with Lincolnshire red facing bricks, with dressings in Howley Park and Ancaster stone. The turrets will be framed in oak covered with lead, and the windows will be glazed with leaded lights. The ground floor will fall eighteen inches towards rostrum. The pewing and all inside joiners' work will be in redwood, stained slightly and varnished. The ceiling will be in plaster, with modelled plaster panels, and coved on wall sides.

Accommodation will be provided in the character powers.

Accommodation will be provided in the chapel for nearly 1,000 people, with vestries, etc., at the rear, the total cost being about 3,300*l*, exclusive of land.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith: do they hold themselves responsible for opinions expressed by their correspondents.]

WHITE PORTLAND CEMENT.

SANDUSKY, OHIO, September 7, 1894.

To the Editors of the American Architect:-

Dear Sir, - I note the paragraph in your periodical of the 18th ult., stating that a considerable demand exists for white Portland cement. In regard to this, would say that we have at our factory the materials for making a white cement, and have made the same on an experimental scale. At present, the capacity of our factory is fully taxed to supply our orders for ordinary Portland cement. We expect, however, within a few weeks to begin the manufacture of white cement on a commercial scale. Tests of the same have shown it to be superior in strength and hardness to ordinary Portland cement, as freedom from iron gives white cement superior setting and hardening qualities.

Very truly yours,

S. B. Newberry.

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OBTON, MASS.—Annual Summer Loan Exhibition of Paintings; also. New Accessions to the Print Department: at the Museum of Five Arts. BOSTON, MASS. -

BRIDGEFORT, CONN. — Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery, September 8 to October 27.

CINCINNATI, O. - Special Exhibition of Paintings: at the Art Museum, during September.

New York, N. Y.—Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

William M. Chase I.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

PHILADELPHIA, PA. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

PROVIDENCE, R. I. - Loan Collection of Paintings: at the Art Club, during September.



The Great Vienna Hallstorm.—Shortly before seven o'clock on the morning of June 7, Vienna was visited by a terrific hailstorm, the like of which has never before been witnessed in the Kaiscrstadt. The last great hailstorm, in 1848, was exceeded in violence by this one. There were numerous accidents, some of which proved fatal. Deaths were caused in three cases by falling trees. Many horses took fright, and their bolting was the cause of a number of more or less serious casualties. The worst of these occurred in a field outside Vienna, where a detachment of artillery, with thirty-two guns, was overtaken by the storm. The horses attached to the guns became unmanageable and ran away in all directions. In a few minutes, thirty soldiers lay hetpless on the ground. Several were run over, one of them being killed. Three officers were also severely injured. In the town itself a large number of people who could not find shelter in time were much hurt by the falling hail. The stones were on an average the size of hazel-nuts and came down in streams. It was about a quarter to seven when the first signs of the rising storm became visible. Dense clouds of a copper-red hue darkened the sky in the southwest. They rose with alarming rapidity until they covered the firmament and produced semi-darkness. A violent hurricane drove up the dust in columns to the height of the fourth floor of the houses. The hail, which was preceded by heavy drops of rain and accompanied by slight sheet-lightning, lay, in the course of a few minutes, six inches to eight inches thick on the pavement. The noise can best be compared to that of a severe storm at sea. The appearance of the capital, which at this time of the year looks its best, was transformed in less than a quarter of an hour into that of a besieged town which had been bombarded. Upwards of a hundred thousand windows were smashed. In one government building, the Ministry of Commerce, over five hundred panes of glass were broken. The Palace itself had six hundred panes smashed. On the upp have to replace the broken glass. — London Times.

An Agreement has just been effected between the Tyne, Wear, Tees, and Hartlepool shipbuilders, and the executive council of the Boiler-makers' and Iron and Steel Shipbuilders' Society, one of the most important trade-unions in Great Britain. In respect to wages, it sets forth that no general alteration shall be made until after six calendar months have elapsed from the date of the last alteration, and no single alteration can exceed five per cent. Four weeks' notice in writing is to be given. Previous to such notice being given by either side, a request for a meeting between the associated employers and the Boiler-makers' Society must be given by the party intending to give notice; this meeting is to be held within fourteen days after the receipt of the request. Failing agreement during the month's notice, the notice may be extended to any time not exceeding another month, if acceptable to both parties; but, whatever the settlement may be, the advance or reduction (if any) will begin from the expiration of the first month's notice. Should a settlement not be effected, the question may be dealt with as may seem best. Sectional or individual disputes, in the first instance, are to be referred to the Society's officials and the employer or his representatives. If any dispute takes place respecting the price of work, the job is to be proceeded with as on piece, and, whatever the price may be when the dispute is settled, the same will be paid from the beginning of the job. Failing a settlement by ordinary means, the terms of settlement are to be adjusted by a committee representing employers, and the Boiler-makers' and Iron and Steel Shipbuilders' Society within fourteen days. Power is also given to each side to ask for a revision of rates in certain contingencies, and it is stipulated that work in all cases shall be proceeded with without interruption pending the settlement of a dispute, whether as to prices or otherwise. A standing committee of three on each side (exclusive of the delegate on each side) is to be a

The scheme is to be tried for a period of five years, to be afterwards terminable by six months' notice on either side. The result of the voting by the men upon these proposals was as follows: For, 15,950; against, 11,840; majority for, 4,110. — N. Y. $Evening\ Post$.

Meissonier's House.—The dream that cheered the declining years of the great artist, Meissonier, was never destined to be realized, and in a few days the beautiful house which he built himself in the Boulevard Malesherbes, in the hope that it might be preserved as a monument of his genius, will have vanished under the pickaxe and crowbar of the relentless contractor. It was in the year after the war that the painter, then in the zenith of his fame, bought a plot of land from the Pereires, and with his own hand drew the plans of the handsome Renaissance dwelling which for twenty years was the rendezvous of all the literary and artistic world. Every detail of the delicate carving was traced by the master, and the woodwork and furniture were faithfully copied from Venetian models. Upon the studio, a noble room, the minutest care was lavished, though the sculptured mantelece which Meissonier intended to execute never saw the light. The walls were covered with choice productions of his brush, and fine proof engravings by Walther, Jacquet and other wielders of the burin. Meissonier was a poor man, and a letter of his is extant in which he expresses distinctly the idea that the State might buy his house and its contents as a national museum, allowing his family to live there in the capacity of curators. Such a project could hardly be regarded as practicable, nor did it for a moment commend itself to his prudent compatriots. The pictures were dispersed under the hammer, and the house is rapidly being resolved into shapeless heaps of rubble. — The Pall Mall Gazette.

Typhoid-Fever — in Memoriam. — According to a newspaper report, one of Alleghany's philanthropic select councilmen proposes to present a drinking fountain to that fair city. As all well-regulated fountains should have an inscription, the Pittsburgh Medical Review sug-

fountains should have an inscription, the Pittsburgh Medical Review suggests the following:

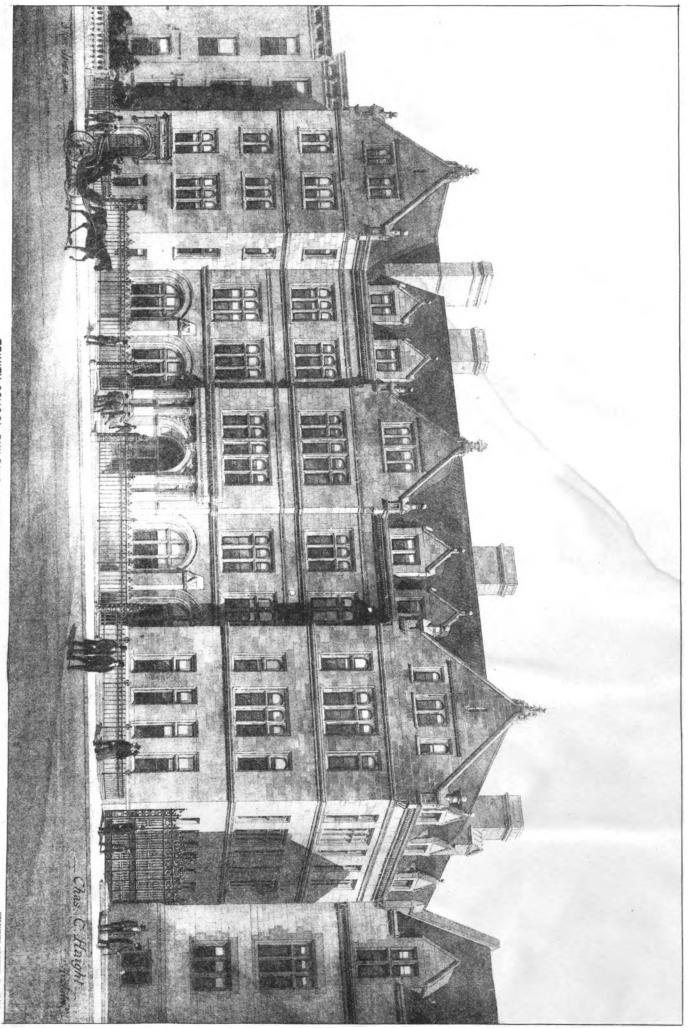
"Erected to the memory of one hundred and sixty-one citizens who drank of this water and died of typhoid-fever during the year 1893. This water is warranted to be drawn from the Alleghany River at a point where the discharges of eighteen sewers of Pittsburg are mingled with the stream, and each drop contains on an average two hundred bacteria." And adds:

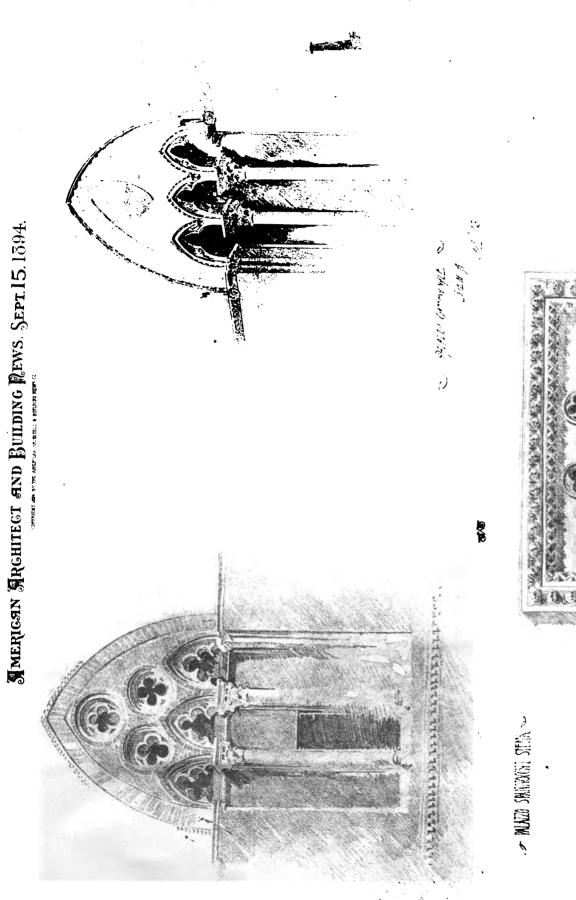
"These eighteen sewers drain an area of seven thousand acres—more than two thirds of the entire territory of Pittsburgh, exclusive of the South Side. Some of them pour their contents into the river a short distance above the influent pipes of the Alleghany water-works, while others are situated irregularly for five miles above, so that the entire volume of water must become contaminated by the Pittsburgh sewers, not to mention the surface drain from upper Alleghany and the numerous towns along the Alleghany and its tributaries. The discharges from the West Penn Hospital patients find their way into the river at a point that is specially well adapted for transference into the Alleghany reservoir, and as many fever patients are treated there during the summer and fall months, when the stage of the water in the river is usually low, the prevalence of fever and death in Alleghany is to be expected, and the source of the infection is not difficult to trace."

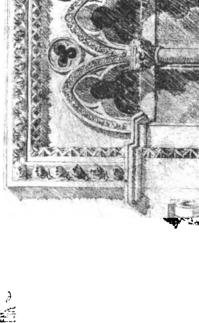
Weather and the Mind.—The psychology of the weather is suggested by Dr. T. D. Crothers as a promising subject for study. He says, in Science: "Very few persons recognize the sources of error that come directly from atmospheric conditions on experimenters and observers and others. In my own case I have been amazed at the faulty deductions and misconceptions which were made in damp, foggy weather, or on days in which the air was charged with electricity and thunder-storms were impending. What seemed clear to me at these times appeared later to be filled with error. An actuary in a large insurance company is obliged to stop work at such times, finding that he makes so many mistakes, which he is only conscious of later, that his work is useless. In a large factory from ten to twenty per cent less work is brought out on damp days and days of threatening storm. The superintendent, in receiving orders to be delivered at a certain time, takes this factor into calculation."

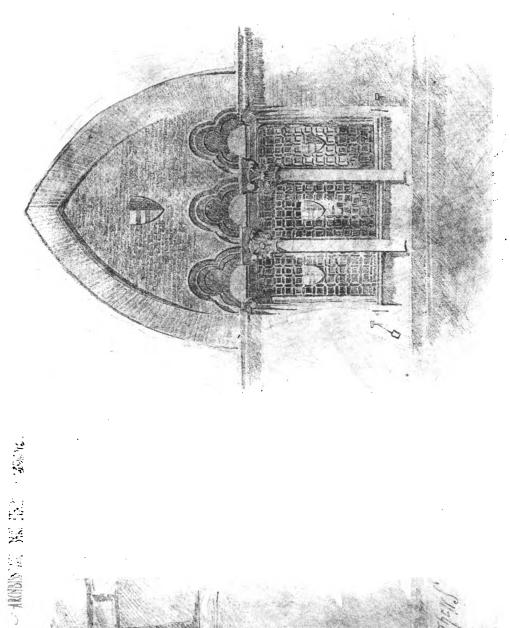
New Candelabra for St. Paul's. — An interesting addition has just been made to the furniture of St. Paul's Cathedral, London, in the shape of two colossal bronze candelabra, copies of famous originals at Ghent. A curious history attaches to them. Cardinal Wolsey, when in the heyday of his power, set about preparing a sumptuous tomb for himself in the Wolsey (now the Albert) Chapel at St. George's, Windsor. Before it was completed his fall came. The sarcophagus — of black marble — intended for the cardinal ultimately became the resting-place of Nelson in the crypt of St. Paul's. The four giant candelabra by Torregiano, designed for the corners of Wolsey's sepulchre, were presented by Henry VIII to old St. Paul's. Being covered with gold-leaf, they were valuable, and a century later they were sold by Cromwell to the authorities of Ghent Cathedral, where they have remained ever since. — N. Y. Evening Post.

A CASTLE THAT COST FOURPENCE. - On the estate of Lord de Vesci, A CASILE THAT COST FOURTENCE.—On the estate of Lord de Vesci, near Cork, is a castle which was built for fourpence. The credit of building a large, roomy castle for this small sum belongs to a lady—Anastasia, the wife of John Archdeacon. In 1638, during the absence of her husband at the wars, she determined to surprise him on his return by having a castle ready to receive him. Accordingly she engaged a number of workmen with whom she made an agreement that while engaged on the work they should purchase clothes and provisions entirely from herself. She is said to have managed the transaction so skilfully that on balancing accounts, she was only fourpence out of pocket.—Freeman's Journal.







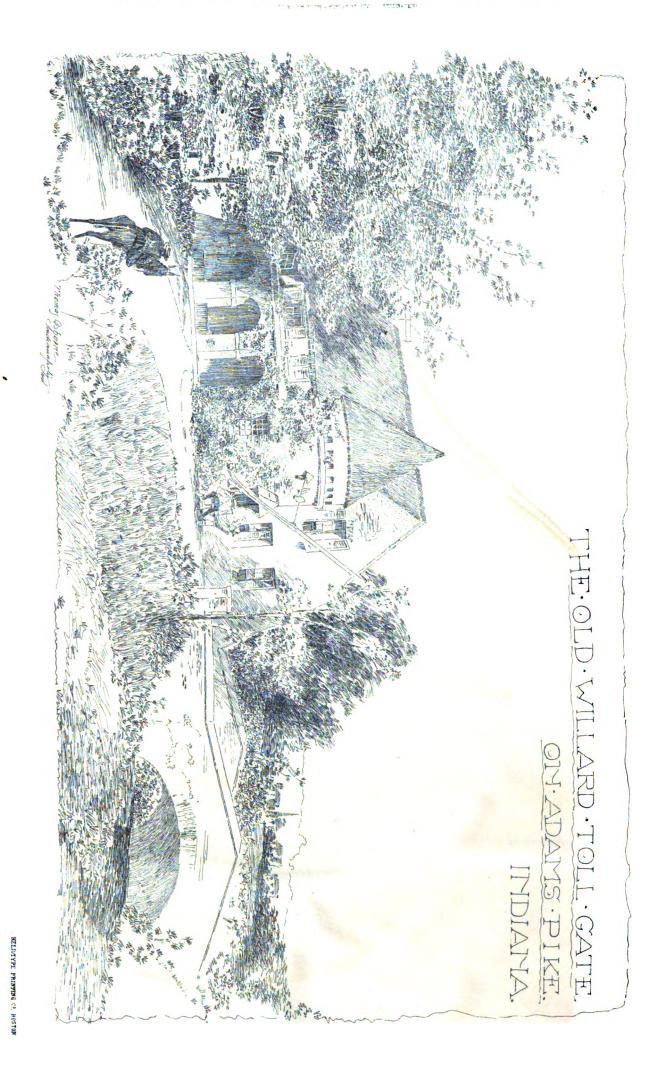


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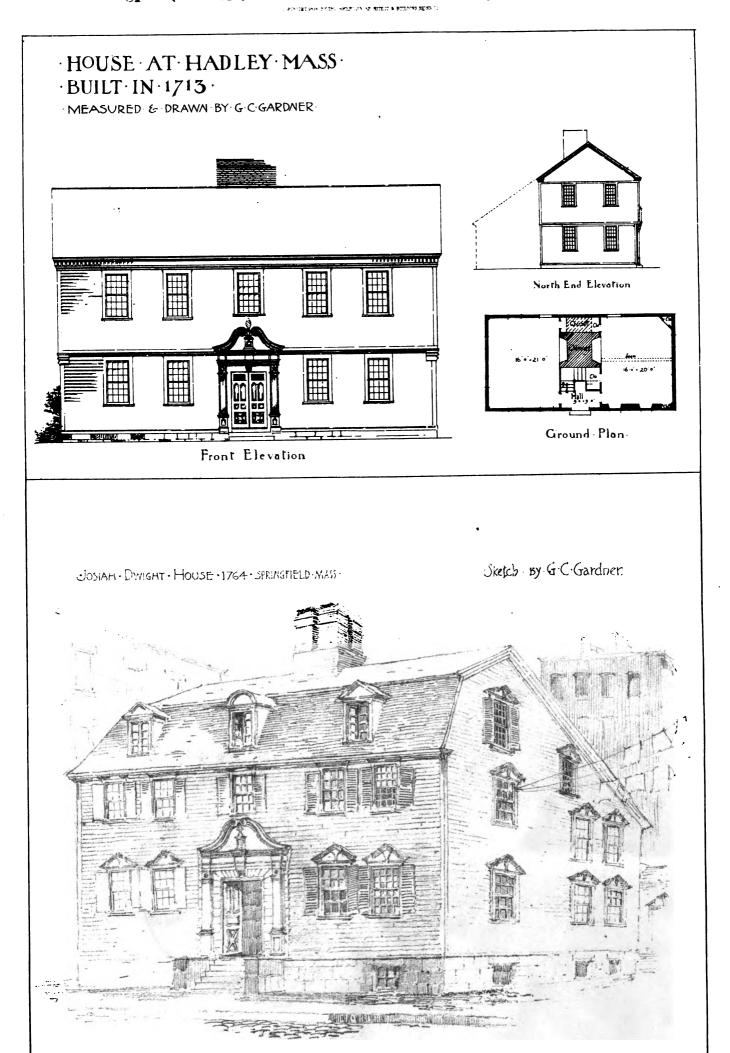
ITALIAN GOTHIC WINDOWS.

Sketched by J. W. CASE, Late Holder of the Rotch Travelling-Scholarship.

120.977. American Architect and Building News, Sept. 15.1594.



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HEI POTYPE PRINTING CO. BOSTON

Entered at the Post-Office at Boston as second-class matter.

SEPTEMBER 22, 1894.



The Failure of Philanthropic Commercialism at Pullman and at Saltaire.—The Enforced Retirement of the Supervising Architect.—The Low Cost of Structural Iron.—Death of Brugsch Pasha, Egyptologist.—The Work Accomplished by the Society of Architects of St. Petersburg.—The Effect of the Recent Earthquake on European built Build-

THE discussion over the Pullman experiment which has been awakened by the investigation been awakened by the investigations of the United States Commission has brought out, so far, a good deal of non-sense from amateur philosophers, which will probably be forgotten when Colonel Wright, as Chairman of the Commission, makes his report, which is sure to have in it enough good sense and knowledge of mankind, rich and poor, to fit out a dozen average social philosophers. Among the latter, the drift appears to be toward a vague condemnation of Mr. Pullman, on grounds either not specified, or ludicrously disconnected with his relations to his workmen. One essayist, of no small reputation, thinks that "Pullmans ought to be impossible," which is quite likely, but, considering that they at present exist, does not furnish a reason for maligning them, or ignoring their just claim to gratitude for the sacrifices which they make for what they suppose to be the good of their fellow-men. Another thinks that a man who has, or expects to have, a German prince for a son-in-law, cannot claim, even if the right to exist at all is conceded to him, any consideration on account of the money and thought which he has devoted to the welfare of the people who work for him. We should judge that the individual who could trace any connection between the nativity of Mr. Pullman's son-in-law and the duties of his workmen toward him, would prefer an Irish alliance for the subject of his disquisitions; but the fact that the people who wish to excite toward Mr. Pullman the old hatred of the poor for the rich have to go so far to find the shadow of a plausible pretext for holding him up to condemnation is good evidence of the meritorious character of his work in his "industrial city." That his efforts have been wasted would be too much to say, for deeds done with good intention, even with negative result, may benefit the character of those who do them; but the prediction which we made, years ago, that the inhabitants of what was then supposed to be the earthly Paradise of Pullman would, before long, fret at the very care taken to anticipate and provide for their wants, has been amply verified. As an illustration of the danger of treating grown people like children in such matters, Professor Simon describes, in a letter which has been extensively copied throughout the country, a visit to the English town of Saltaire, which was built very much in the same way as the City of Pullman, and for the same purpose; and was heralded in exactly the same way, as the place where philanthropy and industry should go hand-in-hand to brighten and prolong the life of the poor workingman. It may be premised that Sir Titus Salt, the founder of Saltaire, was a woollen manufacturer in a small way. He found in the market some bales

of a very cheap, long-stapled wool, brought from South America, and said to come from a sort of a mountain goat, known locally as the alpaca. He carried home some of this material, and tried to weave it, but without success, neither wool nor cotton machinery being able to make cloth out of it. Believing, however, that something could be done with it, he persevered, designed new machinery, and tried new processes, until he succeeded in producing the cheap, handsome and durable fabric known as alpaca. A great demand sprang up for the new goods. Mr. Salt, as he was then, had no monopoly of them, for other manufacturers tried their hand, and produced alpacas; but he had a long and thorough experience, and the public preferred his cloth. Here a problem presented itself, which we commend to Mr. F. B. Sanborn and others. If Mr. Salt sold his alpacas at the same price as other manufacturers, the public would take so many that his profits would soon make him a rich man, a creature which, according to these philosophers, has no right to exist. If he sold them at so low a price as to make little or no profit, his competitors, who understood the business less thoroughly than he, would be ruined. Like many another man in similar case, Mr. Pullman probably included, Mr. Salt chose to sell his goods at the market price, and try to return a part of the profits to the community by spending them on appliances for promoting health and happiness among people who could not themselves afford to pay for them. His model town of Saltaire was the result of his carefully pondered efforts to do all the good he could with his money; yet, at Saltaire, as at Pullman, according to Professor Simon, the people, although their wages are high, are, on the average, improvident, uneasy and lazy, if not worse. In one word, they have suffered the natural consequence of being relieved from the necessity of working long and hard, and depending on themselves. Unquestionably, the result at Pullman has been the same, and, until the curse of Adam is removed, the efforts of rich people to make life easier for their fellow-men than it has been for themselves will probably meet with similar failure. It is said that one reason of the want of success of the Pullman scheme is to be found in the "hard, cold manner" of Mr. Pullman himself; but, supposing this to exist, which is at least doubtful, no such reason could be urged for the similar failure of the scheme of Sir Titus Salt, who is described as having been a marvel of amiability, and the explanation must be sought in the laws of human nature.

HE daily papers reported on Wednesday that Secretary Carlisle, in "a curt note," had demanded the resignation of the Supervising Architect of the Treasury Department, Mr. Jeremiah O'Rourke. As neither official has been willing to afford the reporters any explanation of this step, the quidnuncs allege that there has been for a long time an irritating amount of friction between the Secretary and his subordinate, as well as between the latter and the officials under him, notably, the head of the law and contract division. our part, we hope that the real reason is because of differences of opinion on the subject matter of the Tarsney Bill, and its successor, the McKaig Bill. It does not matter which official has been the obstructionist who has succeeded in postponing the reorganization of the method of designing the Government buildings. There is reason for believing that the defeat of the architects' efforts has been due to the influence of one man, and the change that has just taken place will shortly allow it to be understood which one of the two men has stood in the way of reform and progress. If the McKaig Bill can be brought up in the autumn session and then passes, Secretary Carlisle will be relieved of a good deal of odium that has been heaped upon him.

T will do no harm to remind the public again that the cost of building-materials is, at present, lower than it will probably ever be again in this generation. Structural iron and steel, particularly, have been selling for many months at prices never before known in this country. Even architects can hardly realize that rolled iron beams, which cost twenty years ago, delivered at the building in the sea-coast cities, six cents a pound, or even more, have been sold at the mills during the past year at less than one and one-quarter cents a pound.

is still a trifle above the current price in Europe, but our structural iron and steel are much better rolled than the ordinary shapes used abroad, and are well worth the difference in cost, even if the Belgian mills were no farther off than Pittsburgh. At such prices, iron floor-beams cost less, for the same strength, than spruce timbers, and less than half as much as yellow pine, and their superiority is infinite. Already, iron floor-beams are extensively employed for dwelling-houses of the best class in our large cities, and their use should increase greatly, in the interest, not only of their owners, but of the public, which finds in every building of incombustible construction a bulwark against fire. Whether structural iron and steel will ever regain their old prices can hardly be predicted, but it is not likely that the mills will accept prices which can hardly cover the cost of production any longer than is necessary, and it would certainly be the part of prudence to take advantage of present rates.

RUGSCH PASHA, the successor of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Mariette as the first Equatological Control of the lamented Control of the lamente ette as the first Egyptologist of the day, died at Berlin a few days ago, at the age of sixty-seven. In his early years, as a school-boy in Berlin, the future Pasha, and favorite of Viceroys, was already noted for his interest in Egyptian antiquity. At the age of twenty-one he wrote, as a Latin thesis, an essay on Demotic writing, which attracted the attention of the learned world. The King interested himself in him, and he was sent to study Egyptian remains in various European museums; and, later, was sent to assist Mariette in his investigations in Egypt itself. On his return, he was appointed Director of the Egyptian Museum at Berlin, with the rank of Professor. Some years later, he was attached to the Prussian Embassy at Teheran, and acted for a time as Ambassador, after the death of his chief. In 1864, he was appointed Prussian Consul at Cairo. Returning to Germany in 1868, he was made Professor of Egyptian Antiquities in the University at Göttingen; but was called back to Egypt by the Viceroy to take charge of the new School of Egyptology at Cairo. He was received with great favor, and resided in Egypt for many years, being elevated successively to the rank of Bey and Pasha. He wrote many books on Egyptology, including a "History of Egypt, from the Earliest Times to the Present Day," which was dedicated to the Viceroy. Probably in deference to the court officials, most of whom, in Egypt and Turkey, speak and read French readily, but know little of German, nearly all his books on Egypt and its history are written in French; but he published, in 1877, a history, in German, of "Egypt under the Pharaohs," and had previously published some less important books on "The Travels of the Royal Prussian Embassy to Persia," and "Notes of Travel from Egypt.'

REW, if any, architectural associations can show a more brilliant record than the comparatively young Society of Architects of St. Petersburg. Some of our older subscribers will remember an occasional reproduction, in our pages of illustrations, of some curious details from Zodtchy, the monthly magazine which this Society began publishing in 1872, two years after its foundation. In 1876, the Grand Duke Vladimir was elected Honorary President of the Society, and accepted the office, and, at the same time, the Emperor accorded to the Society an annual subvention of four thousand roubles, or about two thousand dollars of our money. Favored by the Court, it is not surprising that the Society has been able to acquire great influence in professional matters in Russia. It has devoted itself particularly to competitions, drawing up rules, and furnishing juries; and a considerable portion of the competitive work of the country is put in its hands. In 1874, the Society, in connection with the Imperial Technical Society, founded a School of Superintendents. This excellent institution gives to workmen the theoretical instruction necessary to enable them to supervise building work intelligently, and the use which it performs is indicated by the fact that the demand for its graduates exceeds the supply. During the last war, the Society raised, by subscription among its members, a sum sufficient to build and equip a small hospital, according to the latest principles of hospital construction, and turned it over to the Red Cross Society, which has conferred upon it the name of the organization that presented it. In 1892, as our readers will remember, the Society, under its Grand-Ducal Honorary President, carried out a very brilliant and successful Congress

of Russian Architects. Two exhibitions, one technical and the other artistic, were held at the same time, which attracted much public attention, and were visited by the Emperor and Empress, and the entire Court. Some years ago, the Society established a fund for the relief of the widows and orphans of architects, which has proved of great service, thirty-two families, or widows of architects, receiving monthly payments proportioned to their needs.

ITHIS is certainly a brilliant history for a society only twentyfour years old, and containing even now only about two hundred regular members. Of course, the Imperial subvention is of great assistance in its undertakings, and it has other ways of raising money for carrying out its benevolent plans. Besides the regular members, who alone have the right of voting, it has about two hundred associate members, who, presumably, pay a small fee into the Society's treasury. Contractors and manufacturers of building-materials are admitted to the Society on this footing, but, of course, have no vote, and are not even admitted to the meetings of the Society except on the occasion of general reunions. Besides this, the Society holds regular weekly meetings through the winter, to which persons not belonging to the Society are admitted, on payment of one rouble. We fear that the funds of our American Chapters of the Institute would not, at present, be greatly augmented by imitating this practice; but it is probably impossible to do any building work in Russia in winter, so that the architects have leisure enough to make their Tuesday evenings entertaining to the public as well as themselves. However that may be, these particulars which we gather from a letter of M. Paul de Suzor, Architect to the City of St. Petersburg, and former President of the Society, to La Construction Moderne, sufficiently prove the energy and public spirit of a society which has already earned the admiration and esteem of the profession throughout the civilized world.

ESSRS. ENDE AND BOCKMANN, the architects of the new Japanese Houses of Parliament, send to the Deutsche Bauzeitung a very interesting letter, which they have received from Herr Seel, formerly their representative in Japan, who is now practising there on his own account, relating his experience during the great earthquake which shook Tokio and Yokohama on the 20th of June, and is said to have been the severest known there for a hundred years. Fortunately, the movement only lasted five minutes. If it had continued as long as in the earthquake of a few years ago, not a house would have been left standing. Herr Seel writes that he was inspecting a new building in course of construction in Yokohama, and was at work in the second story, when a mighty shock made everything tremble around him. As he writes, he is tolerably free from the so-called "earthquake panic," and had never before left his room, or his bed, during the slight earthquakes common in Japan; so he stayed where he was, although the building swayed, as he estimated, at least a foot, and the workmen were climbing like monkeys down the scaffold-poles to the ground. A second shock, however, came on, and his resolution failed him, and he followed the workmen to the more solid ground, although this was moving sharply. How he arrived at the foot of the scaffold he was unable to recollect, but, once there, he was cool enough to observe with interest the phenomena about him. His first thought was for the new Parliament Houses, and he hurried there, but was gratified to find that the earthquake had not produced, so far as he could see, the slightest crack, or other sign of injury. This gave him the greater satisfaction, as ruins were visible all around, some among the buildings constructed after the European fashion. The Marine Minister's palace had lost a number of chimneys, besides its dormer-windows; the German Embassy-house had suffered greatly, so that the occupants had been obliged to leave it, and the temporary Parliament House had lost its chimneys, which, in falling, had broken their way through the building to the ground. As a rule, however, the European buildings had resisted the shock far better than the light structures of the natives. Messrs. Ende and Böckmann send with the letter an explanation of the resistance of the new Parliament House, saying that its walls are very thick, and very thoroughly bonded, and batter slightly inward; while strong iron rods tie it together in all parts of each story.

THE EFFICIENCY OF INSENSIBLE VENTILATION.1

NSENSIBLE ventilation is due to the interchange of air through the materials of which the walls of a building are constructed and through cracks and crevices which are ever present around doors and windows in spite of the best workmanship. Most building materials are easily permeated by air when there is an unstable condition of the atmosphere due to the pressure of the wind, changes in temperature, or internal pressure caused by incoming air from an

indirect source of heating.

Before considering the amount of this interchange, I will give you briefly the requirements for good ventilation. The proportion of carbon dioxide exhaled in a given time by any number of persons is nearly uniform, so that the quantity present in the air can be taken to represent very accurately the degree of vitiation from respiration, though the carbon dioxide is not the objectionable element. Pure carbon dioxide may be present in a proportion as high as 150 parts in 10,000 without producing discomfort or giving any special evidence of its presence, but if all that is present above the normal per cent is due to the processes of respiration, then the objectionable impurities due to the exhalations from the lungs and body become noticeable when the carbon dioxide is present in a proportion of 8 to 10 parts in 10,000; thus, we use carbon dioxide merely as an indicator of other impurities less easily determined.

indicator of other impurities less easily determined.

From Billings's "Ventilation and Heating," the following data are taken to show the amount of air necessary for good ventilation. An ordinary adult makes sixteen respirations a minute of 30 cubic inches each, or 480 cubic inches per minute. In addition to the carbon dioxide thus exhaled, about one-fifth more is given off by the skin. The total amount varies with the weight, age and state of activity of the different organs, and averages about .6 cubic foot per hour tor each person. "If now we divide the amount of carbon dioxide exhaled in an hour by the limit of respiratory impurity for good ventilation, we shall have the number of cubic feet of air per hour required for one person," that is, suppose the air enters, containing four parts of carbon dioxide in 10,000 and we do not wish to exceed eight parts, then the limit of impurity due to respiration would be four parts or 4-10,000. Dividing .6 by this would tion would be four parts or 4-10,000. Dividing .6 by this would give 1,500 cubic feet as the amount per hour required for each individual. This value is frequently used, but it is better to allow

Having this much established, I will now refer to the porosity of building materials. Putnam gives data credited to Bowditch and Lange from which the following results were computed, showing the Lange from which the following results were computed, showing the amount of air in cubic feet passing through different ones per hour, per square feet of surface under a constant pressure of about 1-100 of an atmosphere which would be equivalent to the pressure of a severe storm. The pieces tested were 1 3-16" thick, and the results per square feet per hour were as follows: mortar, 10.6 cubic feet; Portland cement, 1.6 cubic feet; Ohio sandstone, 3.2 cubic feet; brick ranged from .078 to 2.89 cubic feet averaging about .75 cubic feet; pine, 11.8 cubic feet. Plaster was about the same as average brickwork. Unfortunately, no results are given on building papers, but I believe the best ones would be found nearly non-porous. To apply the above data, I have assumed a room twenty feet square apply the above data, I have assumed a room twenty feet square and twelve feet high, with two external walls. In making the above tests, the pressure was perpendicular to the surface, so in this case we must consider only one wall surface, because if the wind blew at an angle, the sum of the normal components of the pressures on both surfaces would be equal to the total pressure on one surface if it was at right angles to it. The surface on one side of our room would then be $20 \times 12 = 240$ square feet, and if we assume that half the window area is on this side, we will deduct forty feet for glass because it is impermeable. We have then two hundred square feet of surface which we will assume to be a 13" brick wall plastered. Our test was made on a piece of material 3-16" thick, but the amount of air passing through porous material of homogeneous structure under constant pressure is inversely proportional to the thickness of the pieces tested. Assuming our brick wall to permit one cubic foot to pass through per square foot per hour, and counting it with toot to pass through per square toot per hour, and counting it with the plaster 14" thick, we would have seventeen cubic feet per hour passing through the wall, not counting what passes through cracks around windows. When we remember, however, that we were calculating upon 1,800 cubic feet per hour, per person, we see this is too insignificant for consideration, especially when, for the pressure of a pleasant breeze instead of the storm pressure upon which we have based our calculation, we would have to divide our seventeen by about two hundred. teen by about two hundred.

Though pine permitted 11.82 cubic feet to pass through, still I think there is no question but that if a frame house is well papered under the siding, its walls plastered and either painted or papered inside, and the outside woodwork painted, it will permit even less interchange of air than the brick wall we have considered. The above computation forces us to the conclusion that the insensible ventilation must be almost entirely through cracks and joints.

Dropping for a moment the theoretical side, I wish to quote you

some practical illustrations showing how great this interchange is, considering first rooms which have no air-inlet, and are heated by direct radiation of some form. Pettenkoffer, a German chemist,

found that by diffusion alone, the air of a room in his house containing 2,650 cubic feet was changed once every hour when the difference of exterior and interior temperature was 34°. With the same difference of temperature, but with the addition of a good fire in the stove, the change rose to 3,320 cubic feet per hour. With all the crevices and openings about doors and windows pasted up airtight, the change amounted to 1,060 cubic feet per hour.

To test the same point, I undertook some experiments, which,

though they did not prove what I desired, are not entirely without interest. The authorities on ventilation say that if in a closed room we liberate any gas, the amount of fresh air entering the room in a given time may be determined by the dilution of the gas in this

I did not take special precautions to have the rooms tight because I wished results from normal conditions, but there were neither inlet nor outlet ventilators. The carbon dioxide was generated by the action of acid on marble dust, and while it was being generated I wielded a huge fan to thoroughly mix the gas. It is erroneously supposed that carbon dioxide separates and falls to the floor because of its greater specific gravity, but having been once diffused, it stays so. The air was, therefore, not disturbed after the first sample had been taken. When the carbon dioxide had grassed to be generated been taken. When the carbon dioxide had ceased to be generated, and the air had become quiet, the first sample was taken in the middle of the room, and samples taken each succeeding fifteen

The first analysis showed 31.9 parts in 10,000, the results for each The first analysis showed 31.9 parts in 10,000, the results for each successive fifteen minutes being as follows: 22.7, 16, 13.4, 12.8, 11.8, 10.2 and 9.86 parts. The air in the room originally showed 7.54 parts in 10,000. The difference between inside and outside temperature was but 12°. In making the calculations, allowance must be made for the carbon dioxide exhaled by two persons in the room. When plotted, these results approximate to a parabola showing that the carbon dioxide diffused more rapidly than the air in the room, which is contrary to the supposition upon which the experiment was based. Calculations of the amount of air which passed out should, of course, give nearly a constant amount for each interval; this, these results would not do. The last four analyses var; this, these results would not do. The last four analyses indicate a more nearly uniform interchange, and it is probable that the excess of carbon dioxide having been by that time diffused, it was passing out very nearly in proportion to the amount of air flowing out. On this basis, we would have an outflow of 1,000 cubic feet each fifteen minutes, or 4,000 cubic feet per hour in a room containing 3,600 cubic feet, and with one wall exposed. This accords quite well with Pettenkoffer's experiment, though the difference in temperature was not so great.

A second test beginning with a lower percentage of carbon dioxide gave similar results. The analysis of the air was made by my brother, who is assistant chemist in the University Laboratory, and great care was taken to obtain accurate results. Pettenkoffer's method was the one used. To a sample of air in a flask, a measured amount of standard barium hydroxide solution is added. The carbon dioxide present combines with the barium solution, forming the white precipitate of barium carbonate. The excess of uncombined barium hydroxide being ascertained by titration with a standard

acid, the amount of carbon dioxide may easily be calculated.

To determine anything whatever about the interchange of air in rooms heated by direct radiation is a very difficult problem. Pettenkoffer's experiment showed that the air changed once an hour with a difference of temperature inside and out of 34°, that is, the outside temperature would probably be about 36°. The lower the temperature ranged the greater would be the interchange, so that, in very cold weather, we could probably rely on sufficient ventilation to supply the number of persons usually living in an ordinary dwelling without there being any surplus for company, but it would vary from this maximum to almost nothing at the season of the year when the inside and outside temperatures are nearly the same.

We must therefore conclude that though in the case of direct

We must, therefore, conclude that, though in the case of direct radiation, the insensible ventilation is an important factor in pre-venting people from smothering themselves, still it is not of sufficient importance to be taken into account in the designing of buildings, and ventilating ducts should be built of ample size to move all the

air required.

Buildings heated by indirect methods give us a little different case. The following account is of an experiment performed by Mr. J. P. Putnam, which he describes in his book on "The Open Fire-J. F. Futnam, which he describes in his book on The Open Fac-Place," in a room 16.4 feet square, and 11.8 feet high having five windows, two doors and a fireplace, with plastered walls and ceilings, and a white-pine floor. A flue from a basement furnace furnished the room with hot air. The windows and doors were first made as tight as possible with rubber moulding. The fireplace was then closed by drawing the damper and pasting paper over the cracks. The brick back and jambs were oiled to render them impervious. All the woodwork was thoroughly oiled and shellacked. A good fire was lighted in the furnace, and the register opened into the room, all doors and windows being closed and locked, and the keyholes stopped up. The hot air entered almost as rapidly with the doors all doors and windows being closed and locked, and the keynoles stopped up. The hot air entered almost as rapidly with the doors closed as when they stood open, and it continued to enter at the rate of eighty-eight cubic feet per minute, without diminution, as long as the experiment was continued. The thermometer stood at 35.6° outside, and the entering air ranged from 104° to 131°. Other experiments gave the same results. A portion of the air must have passed through the pores of the materials, and the rest through

¹A paper by James M. White, Assistant Professor of Architecture at the University of Illinois, republished by permission, from "Ninth Annual Report of the Illinois Society of Engineers and Surveyors."

This experiment was cracks and fissures which escaped detection. performed on the 3d of March. On the 5th of March, a coat of oil paint was applied to the walls and ceilings. This diminished the escape of air only about 5%. On the 19th of March, four coats of oil paint had been put on the walls and ceilings, and three coats on oil paint had been put on the walls and ceilings, and three coats on the floor, to render them absolutely impervious to air. The escape of air was diminished only about 10%. On the 25th of March all the window sashes were carefully examined, and all visible cracks at the joints, at the pulleys, cord fastenings, etc., carefully caulked and puttied, and the entire room examined, and putty used freely wherever even a suspicion of a crack could be found. The result of all this was a diminution at the utmost of but 20% in the escape of air, or, in other words, in the entrance of air through the register. Each experiment was continued during more than an hour. The air entered as freely at the end as at the beginning of the hour, when a volume of air more than equal to the entire capacity of the

room had entered it through the register with no visible outlet.

In my study, which is in a frame house fairly well built, I found that the furnace delivered a constant supply of air averaging ninety cubic feet per minute, or 5,400 cubic feet per hour. I made no attempt to stop up crevices, but the windows and doors were closed. The room has two outside walls and three windows, and contains 1,620

cubic feet.

Usually, we may assume as a rough estimate, that a quantity of air 1½ times the volume of the room should be admitted per hour to

satisfactorily heat it without overheating the incoming air.

These last two experiments would then seem to prove that for rooms heated indirectly we may safely admit a volume of air equal rooms heated indirectly we may sately admit a volume of air equal to 1½ times the volume of the room per hour without furnishing it any outlet, and further, that the number of people who can occupy such a room without the air deteriorating would be found by multiplying the volume of the room by 1½ and dividing by 1,800, which is the number of cubic feet we were to allow per person. This would allow, in an average house, about two persons to a room, and where houses are built with arches and folding doors between rooms, as is now the custom, we may in the same manner calculate the number of people who may occupy the house without suffering from ill ventilation. You may infer by this time that I believe it is unnecrestary to provide ventilating ducts where indirect methods of heating are used, but that is not the case. Though there may be ample interchange of air without them, and the inmates are not likely to suffer, still, I would rather have the impurities carried up through a shaft and distributed outdoors than to have them strained out as they pass through the walls, and left adhering to the surface to be brushed off by a passing draft and carried back into the lungs.

Our client's purse may not permit a system of vent ducts, and knowing that he will get very fair ventilation with indirect heating without the ducts, the building usually goes without them, but I should prefer them in all cases. They need be designed to care for only about four-fifths of the outgoing air, for insensible ventilation will, in all cases, remove part of it.

We may, therefore, conclude that in buildings heated by direct radiation insensible ventilation will give a fair supply of air for a

radiation, insensible ventilation will give a fair supply of air for a short time in the winter to the occupants of a dwelling-house, providing there are not more than two to a room, but that as the temperature outside rises, the ventilation diminishes, and we will come to the point where it is too cold to open windows, and still the difference in temperature is not enough to cause the circulation of

whenever the fire is going, and, as business men, we are usually forced to rely on this, though from a hygienic standpoint, we should not depend wholly upon it in that case.

For lecture-rooms, school-rooms or other places where numbers of people are expected to assemble, insensible ventilation should never be considered. Ample ducts should be provided, and a positive circulation created by fans or the application of heat at the base of the flues.

THE ANGLE OF CONTENT.

HAVE been trying to design a small country house. I know exactly what I want. My needs are very simple and correspondingly definite. On the first floor, there must be a large living-om, twenty feet by thirty feet. The windows are to be broad and room, twenty feet by thirty feet. The windows are to be broad and the ceiling low. On one of the longer sides, a generous fireplace; opposite, a succession of low windows opening on a fine prospect, preferably to the west or southwest. A broad hall. A dining-room, fifteen feet by twenty feet, and the necessary pantries and kitchen. Further, there is to be a small entrance porch, and in addition, a wide living porch on another side of the house. This latter condition is important; it provides that the family group addition, a wide fiving porter on another state of the flouse. In latter condition is important: it provides that the family group shall not be disturbed by every chance visitor. Upstairs, I want four chambers, perhaps fifteen feet by twenty feet, and a good-sized bath-room. Then in the attic, there is to be a trunk-room, a workshop and a servant's room. I will have no store-room. They are immoral institutions, tending to the accumulation of useless rubbish, and the withholding from your poorer neighbor of much stuff that will be of little benefit to him! In this ideal household of mine, we give away everything we cannot use. This induces a benevolent feeling on our part, — and makes house-cleaning easy.

Such are the requirements. They are simple enough, and as I have said, they are very definite. Moreover, I know just how I want the rooms arranged — I have provided for all the local geography. The living-room is to occupy the whole front of the house; the hall to run through from side to side, with the entrance porch at one end of it, and the family porch at the other; the dining-room and kitchen to be in the back of the house, with the dining-room opening on to the living porch. The upstairs

arrangements are equally simple.

It takes time to evolve such a simple house as this. I have been at it for years. Not continuously, of course, but at odd moments and in very odd places. It has become very real to me. I am familiar with every foot of it. I can wander over it in the dark. I experience the pleasant monotony of daily living in it. Of a winter evening, I sit in front of the generous fireplace, toasting my long limbs in the warmth, and letting my fancy wander with the flickering, capricious light. Curled up in a big arm-chair, I read a favorite book, Emerson or Arnold, Spencer or Ruskin. Better still, I throw myself at full length on the bear-skin rug in front of the fire — the bear I killed in the Carolina mountains a year or so since — and listen to Carolus play the Twelfth Nocturne. I have a Steinway Grand in the living-room. In more carnal mood, I am having a cosy dinner-party just across the hall, or drinking early coffee of a summer morning on the wide living porch, and wondering, with all the pride of a successful farmer, whether any one ever grew strawberries quite equal to those before me, just freshly-gathered from my own garden. Industriously inclined, I am up in the work-shop, building electric-stoves, so convenient as to rob the cook's sudden departure of all its terrors; or repeating the experiments of Herz, or making models of steamers that will go a hundred miles an hour—on paper.

Like my imaginary house, this imaginary life is very real to me.

I delight in my possessions, and have no taxes to pay. I am a careful householder, a successful host, an earnest student, and the little country-house is very dear to me, for it has made all these functions possible. But observe that in these day-dreams of mine, I never go out of doors. I never gloat over my little house as it peers out from the wood, or clings to the hillside, or commands the soft and velvety meadow. And here is the whole trouble. I have had to stay indoors, or at best, venture no farther than the porch. I have been a prisoner and in my own house. The jailor was indecision—indecision about a ridiculous but all-important matter the angle of my roof. The dilemma was absurd, but, nevertheless, it was a real dilemma and kept the house from being builded. It was easy enough to arrange the ground floor, and comparatively easy to fit the second floor on this, and the attic on this again.

But with the outside, it was different. It is to be the home of a philosopher and a man of sentiment, and the roof must express both facts. You see the difficulty? There is but one angle that will do this, while of roof-angles in general, there are an infinite

number.

First, I had to decide on the style. The plan lends itself to many yles. I have done it in the best Colonial, and painted it white and yellow, with olive-green blinds, and approved balustrades over the eaves, and details from Westover House. I have done it in Early English and made an Anne Hathaway Cottage out of it, with steep thatched roof and timbered gables. I have tried the Italian, with smooth plastered walls, gay-colored awnings, and a roof of mediæval tiles made at Perth Amboy. In an humbler frame of mind, I have covered my house with shingles and affected a plain farm-house style, such as my forefathers up in Connecticut used to build, and thank Providence that certain trees had been created splittable. Finally, I have given it the form of a châlet, and this because I was once a student at Zürich, and have tender memories of blue lakes and steep mountains, and the timbered châlets from which all these can be seen. I do not wander so far afield now-a-days. I have since been drowned in the shallow depths of too blue — but this has nothing to do with the angle of content, or perhaps it has.

At any rate, I do not suffer for lack of ideas. I say this mo

At any rate, I do not suffer for lack of ideas. I say this modestly. In the matter of possible styles, I have an embarrassment of riches, as I have an infinitude of possible roof angles. And these different styles express such different sentiments. One style, and my house is pretentious; another, and it is crude; another, cosy, or ill-atease, or hospitable, or unfriendly, or contented, or anything you will in the whole catalogue of the desirable and the undesirable. This makes one hesitate. It is I who am to live in this house—this is what I am constantly saying to myself. Whatever sentiment I impress upon it is to stare at me day after day, winter and summer, year in and year out. It is to be the first to greet my guest, before the interior has had a chance to say a word. It is to proclaim to my neighbors, or such of them as are sensitive enough to read, just what sort of a man I am. And, finally, when my estate is being I say this modestly. what sort of a man I am. And, finally, when my estate is being settled, this same bit of sentiment is to go into the inventory of my

effects, and condition the wealth of my heirs.

This is a formidable catalogue. All the considerations are very subtile. I am fortunate in knowing exactly what sentiment I wish my house to express. I am at great trouble to find out how to give the sentiment adequate expression. We of the laity do not often state the problem so plainly. This is the reason we get on so badly with our architect. Sentiment is vague. There is little practice in the art of expression. We fail to catch our own inner motive. We fail to communicate it. As a result, our architect succeeds in producing something that pleases neither himself nor us. We vote

him a dull fellow after all, and lament the days of the old masters. This sense of proportion, — what is it? I have never been able to decide. It baffles analysis. Looking at the Kölner Dom, the Parthenon, the Venus de Milo, the Apollo Belvidere, one is tempted to believe that there is such a reality as absolute beauty, and that the dimensions of a structure may be intrinsically excellent. Hearing the criticisms of contemporary artists, it all seems relative: the sense is evolutionary, and depends solely upon the degree of heterogeneity developed in the observing organism. Which is it? In my builder, the sense is not dull,—it is absolutely wanting. In me it is uncomfortably keen. There are rooms, halls, buildings, decorations, constructions, garments, even people and occasional landscapes whose proportions are such as to arouse in me an active sentiment of rebellion and disquiet. There are others which so completely satisfy this sense of proportion that they are a constant sentiment of rebellion and disquiet. There are others which so completely satisfy this sense of proportion that they are a constant delight. I cannot defend my opinion. I cannot tell why it is so. I can only announce the result. We have some dreadful architecture in America. It is because the men who made it have not this inborn sense of proportion,—the prime qualification of the architect. I am thinking of San Francisco, with its rows of hideously ornate wooden houses, and its intemperance in the matter of

bay-windows.

This bringing of the concrete material and the abstract sentiment into harmony with each other is as fascinating as it is difficult. Who wants a house without character? Certainly not a philosopher and a man of sentiment. It is a very intellectual thing to make the outside of your house say what you want it to. In this case, it is to be devoid of all insincerity and pretension. It is to be absolutely simple-minded. It must express substantial comfort, a sturdy independence, a philosophic self-respect, a keen sense of beauty. On the whole, an exacting list.

the whole, an exacting list.

But I am making some progress. I use the method of exclusion. I have decided against the Colonial. Its ampleness suggests big families, and an amount of domesticity not philosophic. Against the Anne Hathaway Cottage, as not lending itself well to my broad porches. Against the Italian, as too wordly. Against the shingled Puritan, as too prim, and too suggestive of predestination and other hard doctrines. These have all been discarded, and I have settled upon the châlet. This for several reasons. It fits both my history and my ideas. It has been the home of an ancient and republican people. It suggests liberty. It is very local, yet it is intensely cosmopolitan: it has sheltered men of every nation: lovers of sentiment, the world over, have transplanted it to their own lands. You remember in *Deutsche Liebe*, the princess lives in a châlet. Intrinsically, too, I like it. The large, low rooms bespeak a homely comfort. The broad, sloping roof is in friendly relation with the elements, but protects you against them when they are too rough in their play. Moreover, it harmonizes capitally with the lay of the land in my little estate. The châlet will rest on a gentle hillside just on the edge of a wood; it will look across a broad and fertile valley, through a sea of misty ether to a line of noble mountains. I shall grow poetic as I sit on the upper gallery and watch the slowly Busy people should turn their houses towards the west. lying day. The glories of the sunset come at the right hour.

But the final difficulty still remains. It is with the angle of the

roof. In a châlet everything depends upon this. If the roof is too steep, the house has an upstart look, as if the sides had been smashed together in bringing from Switzerland, — just what I do not want. If the roof is too low, the effect is depressing and there is total loss of self-respect, — also just what I do not want. I have tried all angles. I have studied photographs. I bought large sheets of manilla paper. I have covered them with elevations of all sorts of châlets. It has taken a prodigious amount of work. But at last I have succeeded. I have just found the right angle, — the angle of content. I am rejoiced. I shall not celebrate by killing a hundred oxen. Times have changed. I shall go to the Symphony Concert instead. For the rest, it is all plain sailing. I shall leave the details to my architect. He is not such a dull fellow, after all. But I shall watch him, goniometer in hand. roof. In a châlet everything depends upon this. If the roof is too

watch him, goniometer in hand.

It occurs to me that I have omitted to tell what I found the angle to be. Perhaps this is just as well, however, for if one did not agree with me, one might be disposed to discredit all the other wise things I have been saying, and that I should much regret. H. H.

THE CONUNDRUM OF "LABOR DAY."

HE Springfield Republican has contained recently the following interchange of ideas on a subject that is interesting a good

many people nowadays:

"Can you tell me what in heaven's name is the meaning of our new national holiday and why it should be called 'Labor' day? What national holiday and why it should be called 'Labor' day? What is it intended to commemorate or celebrate, and how should it be observed? If I should advertise to-morrow for 50 'laborers' I should probably have the next morning from 50 to 500 applicants bringing their strong arms and possibly a shovel or a hod by way of tools. There would not be one among them who could shoe a horse, weld a piece of steel, hang a roll of paper, solder a joint, make a chair, a box, or a window-frame, plane a board, lay a brick, act as motorman or conductor on an electric car, and still less handle a locomotive. They would be 'laborers' pure and simple, and the advertisement would be properly answered. If I wanted anything

else I should have to avertise for something else, for farmers, mechanics, clerks, teachers, or whatever it might happen to be. Now, there is nothing in common, unskilled labor that we need to exalt and glorify, to celebrate with the timbrel and the harp, the fire-cracker and the lunch-basket. It is indispensable and honorable, of course, if well done, but its spirit and achievement are not a sufficient cause for national thanksgiving.

If 'labor' is not thus restricted, then every man, woman and

If 'labor' is not thus restricted, then every man, woman and child who works either from necessity, choice, sense of duty or greed of gain, is a laborer. Whether the work is done with the hands, or the head, the feet or the mouth, it is work, and whoever does it is a laborer. He or she may be a clerk, a hod-carrier, a teacher, mechanic farmer, engineer, commercial traveller, banker, lawyer or journalist, manufacturer, milliner, typewriter, philanthropist, explorer or inventor, each and all belong to the world's great army of laborers,' and while there may be intrinsic, certainly are many factitious, reasons given for esteeming one kind of labor as more desirable and worthy of respect than another, there can be no difference of the state sirable and worthy of respect than another, there can be no difference in the degree of honor that is due to those who are willing to do their part in the world's work according to their opportunity and ability; and no degrees in the dishonor that rests upon those who are willing to shirk it. Any other ground than this is absolutely undemocratic, un-American and un-Christian. The situation is too

simple to admit of argument.

But now we come back to the first question: what is the meaning of Labor day? Is it for certain kinds and classes of labor? If so, for what? Is it to mark and emphasize class distinctions in labor, and undermine what for more than a century we have been trying to establish? Is it to be, in fact, 'Lazy' day, an excuse for those who are doing work that is distasteful to them, to throw off for twenty-four hours what they consider a bane and a burden, and for one day to do nothing which is of the least benefit to themselves or anybody else?

"Or, is it to be on a large scale what the famous industrial guilds of Florence were — a source of inspiration to the civilized world for all future time? Are we to have as a part of its celebration, exhibitions of skill in the innumerable fields that are covered by human activity with honorable incentives that shall tend to better and better results, both for the thing that is done, and for him who does it?

"Let us hope and, if we can find out where to take hold, strive to make it, at least, a means of maintaining the dignity and the worth of every conceivable form of helpful human industry, of the ability

and disposition to work while the day lasts.

"And finally, is it not for those who have money, brains and time to use for worthy objects to make Labor Day like labor itself, a perennial and universal blessing?"

E. C. GARDNER. Springfield, Sept. 1, 1894.

PLEA IN ANSWER TO E. C. GARDNER'S QUERIES.

Shrewd Mr. Gardner, sharpening his pen, Inquires "why Labor Day's called Labor Day" And "what it means, in heaven's name"; and then He wants to know what is the proper way To celebrate the worth of laboring men, And hints a doubt if ordinary labor Deserves a special timbrel, pipe and tabor.

If Mr. Gardner covets information He'll find an answer to his perquisitions
In any Legislature's legislation;
Or he may get it from the politicians,
Who, with a little shuffling and evasion,
Will show the need of labor "recognitions".
Since lukewarmness in truckling oft denotes
A painful loss of processary votes. A painful loss of necessary votes.

Perhaps the daily press may give a clew, That virtuously arraigns the A. P. A.,
And fears to give the devil half his due,
Lest Pat should take his patronage away.
Perhaps he'd get a hint from me and you
(The need to rhyme makes this inversion — p
Reread it "you and me"), if he should look
In on some little confab with the cook.

Howe'er this be, I modestly opine That he's a little cynical, in thinking
Labor much puzzled — if the weather's fine —
To use a holiday, unless in drinking: —
Some of it with a book likes to recline;
Some "wheels" afield; some does a little prinking;
All of it likes to lunch, lounge, stroll and spark,
And "do" the tombs and lilies in the park.

"What's in a name"? - If the name seems unmeet, "What's in a name"? — If the name seems unmeet, The thing's a good; if our new holiday "By any other name would smell as sweet" — Or even sweeter — since 'tis here "to stay," Pray make it glad, ungrudging and complete; And you, who have the "brains," point out the way, To ordinary, fatuous, dull humanity, To celebrate itself without inanity.

Springfield, Sept. 4, 1891.

A PLEASED READER.



THE REPLICATION.

"Pleased Reader":

I know not if I ought to say Dear Sir, or Madam:—
I'm truly grieved by your severe and dark suspicions
That all these sturdy toiling sons of Adam
Are helpless tools of selfish scheming politicians.
If that is true, then Freedom's Temple, democratic,
Needs drastic disinfecting, from ground-floor to attic.

Yet you reply so wisely and so well, dear brother —
Or sister, — as the case may be — to all my questions,
That I am fain to ask on this broad subject, still another,
And eagerly await your rhythmical suggestions.
Please manifest for me once more your mind's agility;
In mortal man, of course, I shan't expect infallibility.

Please tell me in these active days of "pull" and "hustle,"
And tell me just as plain and clearly as you can,
In what proportions of clear brain and healthy muscle
You would compound a genuine "laboring" man?
Inform me, and with me the many million "masses,"
Just where the line twixt "laborers" and "non-laborers" passes.

Envoy.

If all of us are "laborers" since creation was begun,
Then in the words of Tiny Tim — "God bless us every one."

E. C. GARDNER.

Springfield, Sept. 5, 1894.

THE REJOINDER.

To one who doesn't own an "International," To one who doesn't own an "International,"
It's really rather puzzling to define.
But, when one's said his say, it's only rational
To heed another's say; — to "draw the line," If asked to do it — and to try to fashion all
The different ingredients, coarse and fine,
That makes the big-L'd laborer complete,
Into a laborer's correct receipt.

Upon the whole it is a serious business, Upon the whole it is a serious business,
Less plain than taking some one else to task;
And how to do it with the proper quizziness,
Without resorting to one's pocket flask,
Quite puzzles one, for there's a certain dizziness
In this ottava rhyme, that makes the cask,
Or flask, a perilous aid to one who'd season
His rhymed rejoinder with a little reason.

But all this proem's neither here nor there But all this proem's neither here nor there—
It reels, somewhat too volubly suggestive.
If I must draw a line—and tread it fair—
Intoxication is somewhat intempestive,—
I'll try to drive my Pegasus true and square
(The starting steed is generally restive)—
So, bringing him at last beneath the "line,"
Here goes—I'll make an effort to define.

The laborer — in the popular dictionary —

to me — hum — one who labors — The laborer — in the popular dictionary —
Is one, it seems to me — hum — one who labor
Hum — labors for another, something chary
Of paying larger wages than his neighbors;
Not, on the whole, a pampered proletary,
Who thinks he merits timbrellings and tabors
(I need that word in abors) and is wary
Of us who, being buoyed in the swim,
Seem, to his ear, to condescend to him.

He finds it rather dull to delve and plod,
Drive teams and engines, saw, scrape, toil and moil;
And, owning all this needful, thinks it odd
That some should get big pay for selfish toil,
While he but shells the peas to get the pod.
It's hard for his slow reason to assoil
The rest of us, for taking what we can;
But, since we do, he follows the same plan. He finds it rather dull to delve and plod,

He feels, as we can scarcely feel, the line
That separates the classes from the masses,—
The fortunate in brains, chance, cash—in fine:—
The racers in the, say, 2 20 classes,
Who've won, or win, the prizes, and define,
Unthinkingly, the distanced ones as asses—
And the poor herd that mutely sweats and strains
To get a stall and fodder for its pains.

The line is real, or so it seems to me;
Inevitable, more or less (see Mill,
Godkin, Wells, Atkinson and Company),
And our democracy defines it still,
Upon new boundaries. — My little plea,
Viewing the abstract matter how you will,
Is merely for a welcome to the day
That gives poor working John a little play.

I think it does him good, and rather think I think it does him good, and rather think
His little titivations don't much hurt him.
Although he seems, at times, too near the brink
Of social gulfs, his reason won't desert him:—
When he comes toward a plunge, he'll pause and shrink—
And you and I'll endeavor to divert him,
Since we've had ours, let's let him have his say,
And spout, or stroll away his Labor Day.

PLEASED REAS

Springfield, Sept. 6, 1894.

PLEASED READER.

DETROIT'S POST-OFFICE.

As we have abandoned a portion of our space this week to the Muse—we forbear to name her—it may be as well to grant a little more space to another correspondent who has followed Mr. Wegg's example and "dropped into poetry" to the following effect:

> Our Government building will soon be complete; To say it is beautiful would be indiscreet, But the law of nature, as observed by the sage, Is that all things change and fade with their age.

This building, intended to be something great, Ten long years has required itself to create; So we fear it comes under the law of the sage, For its beauty is fading as well as its age.

To the Romanesque style is due an apology, Since the author lost sight of true genealogy; So to call it—to name it—why, 'twould be a sham! But 'tis stamped with the trade-mark of our Uncle Sam.

The limestone, once of a beautiful gray hue, Was nice when prison-labor handed it over as new; But the law of the sage can't be treated with scorn, So the structure grows hoary while yet being born.

Antique its appearance, alas, not its design, For no ancient e'er pondered o'er structure so fine Greek art is an infant and Roman art is laid low, Romano-Greek genius for us was too slow

As the stars greatly differ in size and in glory, So human tastes differ in art and in story; Some people may think Detroit's Post-office grand, But, we pray you, don't copy it all over the land.

What this country now wants, and has lacked from the start, Is divorce everlasting 'tween statesmen and art. Granted this, we may hope to see rise on all hands Structures grand in their beauty as in other lands.

N. W.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

ENTRANCE TO THE TEMPLE BETH-EL, FIFTH AVE., NEW YORK, N. Y. MESSRS. BRUNNER & TRYON, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

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[Additional Illustrations in the International Edition.]

WELL OF QUENTIN MASSYS, ANTWERP, BELGIUM. [Gelatine Print.]

POST AND TELEGRAPH BUILDING, ZÜRICH, SWITZERLAND. HER-REN VON CHIODERA & TSCHUDY, ARCHITECTS.

This plate is copied from Architektonische Rundschau.

COMPETITIVE DESIGN FOR AN EVANGELICAL CHURCH, KARLS-RUHE, BADEN. HERR. G. FRENTZEN, ARCHITECT.

This illustration is copied from the Deutsche Bauzeitung.

THE COLLEGE LIBRARY, VICAR'S CLOSE, WELLS, ENG. This plate is copied from the Building News.

CHANCEL OF THE NEW CHURCH OF ST. GEORGE, WORCESTER, ENG. MR. ASTON WEBB, ARCHITECT.

This plate, copied from the Builder, shows a building which will cost about \$37,000 and is to seat some 730 persons. The total width is 60 feet, the length 117 feet; the internal width of the nave and chancel is 27 feet 4 inches, while the height to the ridge is 51 feet.

A SMALL COUNTRY HOUSE AT STEEP, NEAR PETERSFIELD, ENG. MESSRS. CHAS. SMITH & SON, ARCHITECTS.

This house, a perspective sketch of which forms one of our illustrations this week, is now in course of erection at Steep. is on the southern slope of the downs, and commands most extensive views towards the coast, which can be fully enjoyed from the balcony and veranda.

MALABAR, TRURO, ENG. MR. SAMPSON HILL, ARCHITECT.

This residence, approaching completion, has been erected near Truro for Mr. W. Chivell. It stands in its own grounds of about twenty-five acres, and takes the place of an old building. The elevation is somewhat lofty, taking advantage of the fine views which the site commands. The walls are faced with a green-tinted freestone from Bodmin quarries, the dressings being of granite, and the pilasters to entrance-porch of polished Aberdeen. The joinery of the principal rooms on ground-floors is of teak wood, and some very effective carving is introduced in the dining-room, hall and very effective carving is introduced in the dining-room, hall and doors. The ceilings of dining and billiard rooms are panelled and enriched in plaster, both rooms having a moulded teak-wood dado. The dining-room has an oak parquet floor, and the floor of billiard-room is laid with solid wood blocks.

RESIDENCE, WESTFIELD ROAD, EDGBASTON, ENG. MESSRS. ESSEX, NICOL & GOODMAN, ARCHITECTS, BIRMINGHAM, ENG.

This residence has recently been erected for Mr. P. A. Martin. The exterior is faced with picked common red bricks and Bracknell rubber brick dressings, and the roofs are covered with brindled tiles.

LONDON & PROVINCIAL BANK, NEATH, ENG. MESSRS. WILSON & MOXHAM, ARCHITECTS.

THE façade is designed in the Renaissance style, and will be built of Box ground stone entirely. On the ground-floor are the bank chamber, with manager's rooms, clerks' lunch-room, strong-room, muniment-room, lavatories and water-closets. There are also the manager's dining-room, kitchen and offices on this floor. The first and second floors are planned for the residence of the manager.

NEW SCHOOL, BATHGATE, ENG. MR. J. GRAHAM, ARCHITECT.



BOSTON, MASS. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts,

BRIDGEPORT, CONN. — Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery, September 8 to October 27.

Chicago, Ill. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.

Cincinnati, O. — Special Exhibition of Paintings: at the Art Museum

during September.

NEW YORK, N. Y.—Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

PHILADELPHIA, PA. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

PROVIDENCE, R. I. - Loan Collection of Paintings: at the Art Club, during September.



THE LUMBER KING AND HIS CRIMES.—A Western lumber expert declares that almost the whole forest area of the country is now in the possession of men who are ruthlessly despoiling it of trees. "I have been appalled," he says, "by the havoc that has laid millions of acres bare by axe and flood and flames, changing the reserve treasure spots of the people into unsightly wildernesses." The few square miles of forest reserved by the Federal Government and the States here and

there, he regards as mere drops in the bucket. Drawing a picture of the immense personal power of the lumber-king of the Northwest, he says: "The land is his and the product thereof; the mills and water-power are his; the stores and necessaries of existence are his; the houses and very sidewalks are his; the cattle and horses are his, and all the people are his retainers and servants; the weal or woe of the community is weighed in his hand, the happiness of many families trembles at his word." Admitting that lumbering operations have increased the population and built up towns and settlements, he points out that the work has been a wasteful and a criminal one. "Even the most ordinary means," he says, "would have prevented the loss of millions of trees by fire, and many years of labor and life, for communities have been lost forever in the immense piles of slabs, refuse, sawdust and ashes that surround and overlie hundreds of milling plants. Stock enough to support a whole generation has been burned up, rotted, or run off in streams; in the haste to get rich, the large things only have been seen, and the little things have been overlooked; the future has been sacrificed to the greed of the present. The men who make the millions out of these operations when the timber is all felled, and the mill silenced, pull up their stakes and fold their tents in the night, like the Arab, and steal away to fresher fields — leaving tens of thousands of former dependents behind to shift for themselves." — N. Y. Evening Post.

THE RESTORATION OF SAN LUIS REY. — We made a trip in a carriage recently to the old Mission of San Luis Rey. Father O'Keefe, pleasant and good natured as always, took us through the church and among the ruins, explaining to us all that has been done and what he hopes to do. The work is at a standstill, almost, for want of funds, and the father is determined only to incur such obligations as he can meet. The place is very interesting, and the work of restoration, when completed will give us a perfect reproduction of one of the meet extended. meet. The place is very interesting, and the work of restoration, when completed, will give us a perfect reproduction of one of the most extensive and complete missions in California. The church is a fine structure, about 60 x 180, imposing in height and with a façade of characteristic design—its severity tempered by an artistic sunniness which takes it out of the typical sombre heaviness of kindred architecture. When looking into the grand patio or court-yard, with its fountains flowing, one can picture to himself the busy season of harvest in the olden time, when the Indian converts were coming in with their carts laden, and one can picture to himself the busy season of harvest in the olden time, when the Indian converts were coming in with their carts laden, and passing their garnered crops into the storehouses, while the tonsured brothers kept talley and count and directed the busy scene. Father O'Keefe finds the work he has in hand a much greater task than he had supposed. Treasure-seekers have tunnelled in every direction, especially inside the church and near the site of the old altar. The result of this crazy vandalism has been that the walls are undermined in many places, and in order to keep them from going altogether to pieces he has had to build foundations anew in the weak spots, and to tear down and reconstruct where irreparable crevices had opened the tear down and reconstruct where irreparable crevices had opened the whole length of the wall. I am told by Bishop Bourgade, of Arizona, that the premature decay of all the old churches is due to the craze of treasure-seekers. It is universally conceded that the San Luis Rey mission was, in all respects, the finest, most perfect and handsome of the missions of California. —Los Angeles Herald.

Both Critic and Revenue Officer.—We hear that William Michael Rossetti, assistant secretary to the Board of Inland Revenue, will shortly resign that post after forty-seven years' service. Mr. Rossetti, who is a brother of the late Dante Rossetti, the poet, and Christina Rossetti, the poetess, has for many years rendered valuable service to the revenue by his valuations of pictures for probate duty. His father, it will be remembered, was Gabriel Rossetti, an Italian patriot of the lyre and the sword, who took refuge in London from the troubles of his native land, and was the well-known commentator on Dante. William Rossetti, like his brother and sister, was born in London. Educated at King's College School, he early joined the Inland Revenue Department, and gained a reputation as critic of fine art and literature as early as 1850. With his brother and with Millais, Holman Hunt and Woolner, he was mixed up in the pre-Raphaelite movement from its commencement in 1848, and he edited the Germ. Among many books he has published are valuable criticisms and biographies, and he has been chairman of the Shelley Society. He is married to a daughter of the late Ford Madox Brown, who is herself an artist and exhibitor at the academy. — London Globe.

Comparative Strength of Materials.—Cast-iron weighs 444 pounds to the cubic foot, and a one-inch square bar will sustain a weight of 16,500 pounds; bronze, weight 525 pounds, tenacity 3,600; wrought-iron, weight 480, tenacity 50,000; hard "struck" steel, weight 490, tenacity 78,000; aluminium, weight 168, tenacity 26,000. We are accustomed to think of metals as being stronger than wood, and so they are, generally speaking, if only pieces of the same size be tested. But when equal weights of the two materials are compared, it is then found that several varieties of wood are stronger than ordinary steel. A bar of pine just as heavy as a bar of steel an inch square will hold up 125,000 pounds; the best ash 175,000 pounds, and some hemlock 200,000 pounds. Wood is bulky. It occupies ten or twelve times the space of steel. The best steel castings made for the United States Navy have a tenacity of 65,000 to 75,000 pounds to the square inch. By solidifying such castings under great pressure, a tensile strength of 80,000 to 150,000 pounds may be obtained.— Railway Review.

STONE RESERVOIRS FOR COMPRESSED AIR.— Great reservoirs for compressed air, near the machinery to be operated thereby, are cut out of the rock at the Mansfield copper mines in Germany, and then lined with cement. There are eight of these receivers, from 1,235 to 3,950 cubic feet capacity. It is stated that a rock chamber of 2,200 cubic feet capacity costs only one-third as much as an iron receiver of equal size.— N. Y. Times.



Land Titles in the District of Columbia. — The continual increase in the value of land in the District of Columbia has led to exacter measurement, in which even fractions of an inch count. It has also produced more searching investigations into titles of land, and has created several extensive title insurance companies. The operation of the law which refuses to allow interference with the possession of land, where it has been held openly and adversely under claim of title for more than twenty years, has put an end to the Blodgett cases and other suits on behalf of the heirs of original proprietors of city lots. Nor do the title lawyers see any cause for anxiety on the part of lot owners from the vague claim that "there are twenty entire squares, and over two thousand single lots now held by private parties to which the United States has a fair, legal title." It is true that "no time runs against a sovereign," and that in the District of Columbia, twenty or more years' possession of land by private owner does not bar the United States from asserting any right in the land from which it had never parted. But, although twenty years' adverse possession under color of title might not be effective if set up in the courts of the District of Columbia against the United States, yet it is believed that title out of the United States can be shown to all the lots of the city. The original owners of land in the District, in the summer of 1791, deeded all their lands to Beall and Gant, trustees, and these trustees conveyed to the original commissioners, who began then the conveyance of lots sold at the land sale of October, 1791, and subsequently. In 1853-55, Mr. Robert Ould, of Georgetown, afterwards United States district attorney here, investigated the matter, and even then no basis was established for extended claims by the United States. No well-informed title lawyer in Washington gives any credence to the idea that any private property in the city is in danger from a raid to be hereafter made by the United States under

The Hod-carrier as an Anarchist.—Prince Frederick Henry of Russia, the twenty-year-old son of that Prince Albert who fills the office of Regent of Brunswick much against his will, has just had a narrow escape from death in a manner that would have been, to say the least, unusual as far as the takings off of royalty are concerned. It seems that whilst riding through the suburbs of Potsdam the other night, an entire hod of bricks was precipitated upon him from the scaffolding of a house in the course of erection. Fortunately, he was struck on the shoulder, arm and thigh only, sustaining severe bruises, though no injuries of a graver character, and as the Prince is almost as stalwart and muscularly built as his gigantic but dull-witted father, he escaped comparatively easy, a few days' rest sufficing to restore him from the effects of this strange adventure. For it was so strange, that the police are convinced the hod of bricks was intentionally hurled at the Prince whose appearance is familiar to the people of Potsdam. The building trades of Berlin and the surrounding districts simply swarm with Socialists and Anarchists of the most advanced type, and inasmuch as from the way that the hod came down from aloft, it could not have fallen, but must have been thrown, there are some grounds for believing that it was the act of an Anarchist desirous of maiming, if not killing, a prince of the blood. When Emperor William and the Austrian monarch were walking together up and down the platform of the railroad station at Abbazzia last Spring, while waiting for the departure of the train which was to convey Francis Joseph back to Vienna, a huge sledge-hammer came crashing down almost at the feet of Emperor William, missing him by only two feet. It had come from the glass roof above, but how it had found its way up there and what hand had directed its flight downward has never to this day been discovered, notwithstanding the most strenuous efforts on the part of the Austrian and German police. Poison, firearms, the bomb and t

Fancied Portraits in Architectural. Sculpture. — Some discussion over conflicting statements upon this subject may be expected to fill the columns of the dailies at the approaching dull season. A traveller lately returned from Antwerp has drawn attention to the curious fact that, in the cathedral of that city, two of the carved heads which support an ecclesiastical chair bear a striking resemblance to the portraits of Lord Beaconsfield and Mr. Gladstone. Visitors to Magdalen College, Oxford, will remember a similar instance in the principal quad. Sometimes such resemblances lie greatly in the eye of the beholder (like Polonius's cloud, "very like a whale"); but there are certainly many curious historical instances of what may be called prophetic likenesses — of features painted or carved in one century which are reproduced in the flesh long after the draughtsman of the picture has passed away. Aubrey tells a long story about some prophetic likenesses in Wells Cathedral. "In the nave of the Cathedral Church at Wells, above the capitals of two of the pillars, are the heads of a king and a bishop; it was foretold that when a king should be like that king, and a bishop like that bishop, abbots should be put down and nuns should marry; above the arch is an abbot or monk with his head hanging down and a nun with children about her. . . . This prophecy was written in parchment and hung in a table on one of the pillars before the Civil War. . . . It was prophesied three hundred years before the Reformation." It is needless to say that an "exact resem-

blance" to King Henry VIII is traced in the portrait of the king, while the likeness of the bishop "much resembled that of Dr. Knight, who was bishop here at the Reformation." It is scarcely necessary to add that these are vain imaginings, and Mr. Hems's letter, refuting by actual inspection the popular delusion, is a welcome and useful contribution disposing of the subject.— Illustrated Carpenter and Builder.

The Allotment of Arid Lands.—One of the most important measures passed by this Congress has attracted comparatively slight attention, although it is one of the most far-reaching in principle that has been enacted by Congress since the construction of the Union Pacific. That is the measure providing for the allotment of arid lands to States in which they are located, and which will improve them. This is regarded in the West as the first step towards the practical solution of the irrigation question. The results of irrigation in the desert regions have been so phenomenal that the matter is regarded by experienced men-as certain to attain the importance of a party policy, which will have a strong effect in the West. The present step towards general irrigation was inaugurated by Senator Carey of Wyoming, who has been accused by some of his Democratic associates in the Senate of having induced the Senate to pass it, as well as the House, for political reasons. Mr. Carey denies the impeachment stoutly, and declares he was prompted in his action by nothing but the consideration of the welfare of his State. It is estimated that it costs about \$10 per acre to introduce a successful system of irrigation. The average cost has been known to run as high as \$20. The measure allots 1,000,000 acres to each State, which implies an expenditure of from ten to twenty millions of dollars in each State having arid lands. A member of Congress, discussing the matter yesterday, said that if there was a fair revival of confidence to induce investors to look into irrigation as a source of investment, this action of Congress would do more to return prosperity to the desert-land States than anything that could happen. It would not only lead to the first heavy disbursements, but would leave the States in possession of the conditions by which prosperity could be nurtured and maintained for generations to come. It would lead to the opening of new lands and the addition of substantial benefits to the whole country. — Washington Post.

Proposed Roman Cathedral in London. — The Times announces that a project, which has been under discussion for thirty years, has practically matured to build a Roman Catholic cathedral in London, on a site in Westminster purchased by the late Cardinal Manning for £55,000. The total cost of the edifice, it is estimated, will be £250,000. Nearly half of that amount has already been subscribed. The whole of Catholic christendom will be invited to subscribe. The architect, Bentley, has been intrusted with the work of drawing the plans. The structure will be of ancient basilican style, which is unique in London. It will be 350 feet long, 270 feet wide, and 100 feet high. It will have a seating capacity of 8,000 persons. The plans will also include a lecture hall, a monastery for thirty monks and forty-five lay brethren, and other buildings. The model is Constantine's Church of St. Peter, at Rome. The foundation will probably be laid next June.

A REVOLVER AS A CURE FOR PANIC. — In the theatre of Homel, in Russia, fire recently broke out at about 9 o'clock in the evening, just as the representation of the second act of a play was beginning. The scenery at the back of the stage took fire, and it spread rapidly. The moment the police officer on duty saw signs of a panic among the audience, he stepped forward to the footlights, a revolver in hand, and, addressing the spectators, said: "If I see any one acting in a way to create disorder, I will shoot him dead." His calmness and resolution had the desired effect. All the people left the house quietly. Not a person lost his life or was injured. The theatre was burned to the ground. — L'Argus.

An Italian Legend. — In the little church of St. Thomas Aquinas, at Piperno, Italy, is a statue of the builder Nallo d'Orieto, who was canonized because of this incident: While building, it was discovered that the tie-beam of one of the trusses had been cut off too short. Nallo was equal to the emergency, for he grasped the end of the beam and gave it such a pull, that he stretched it a little too much, so that quite a piece had to be cut away before the joint would come to a bearing. Why Nallo should have been canonized for overdoing his trick, and causing needless waste of material and labor, does not appear.

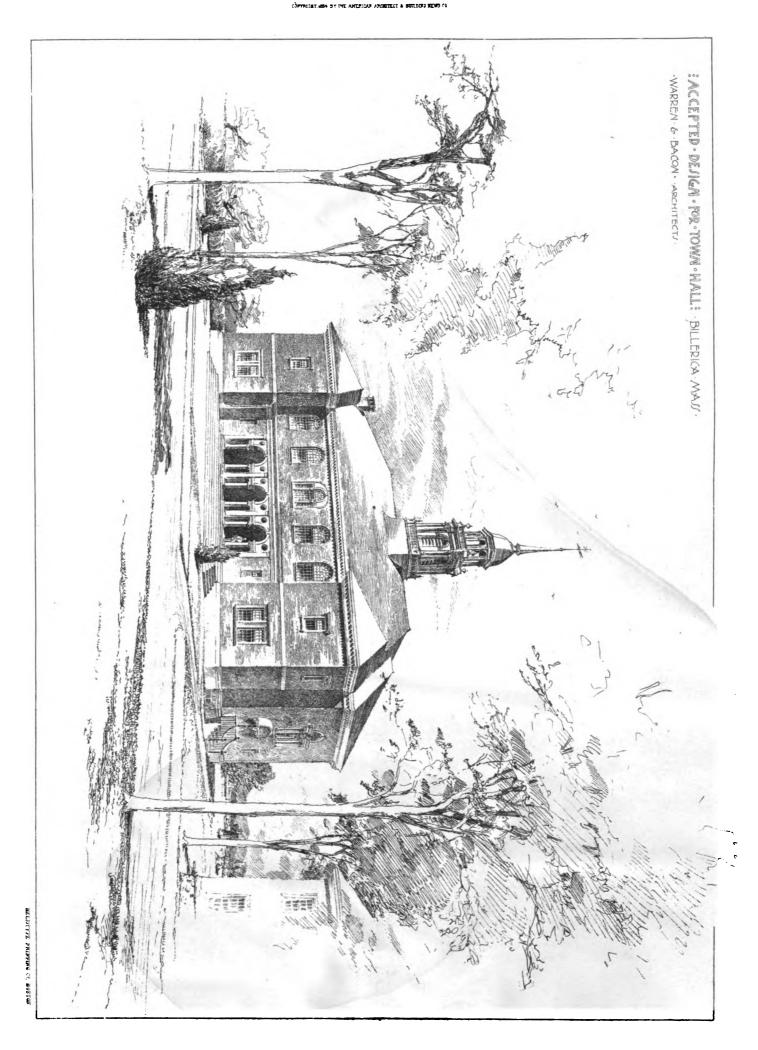
THEATRES AND POPULATION.—There is a theatre in Paris for every 32,000 inhabitants, one in Berlin for 81,000, one in Bordeaux for 84,000, one in Budapest for 85,000, one in Hamburg for 113,000, one in Vienna for 138,000, and one in London for 145,000. There are more theatres, proportionately to the population, in Italy than in any other country, there being one to 9,800 inhabitants in Cantania, one to 15,000 in Florence, one to 20,000 in Bologna, one to 24,000 at Venice, one to 30,000 at Milan and Turin, and one to 31,000 in Rome.—Exchange.

A Monster Lamp. — The Echo des Mines announces the invention by a young Belgian of a lamp such as has never been seen before. The lamp is composed of 3,000 pieces. It is six feet high, and measures 3.10 feet in diameter. Its light is so strong that one can read by it at a distance of six hundred feet. The lamp is fed with lard-oil, and the consumption is said to be very small.

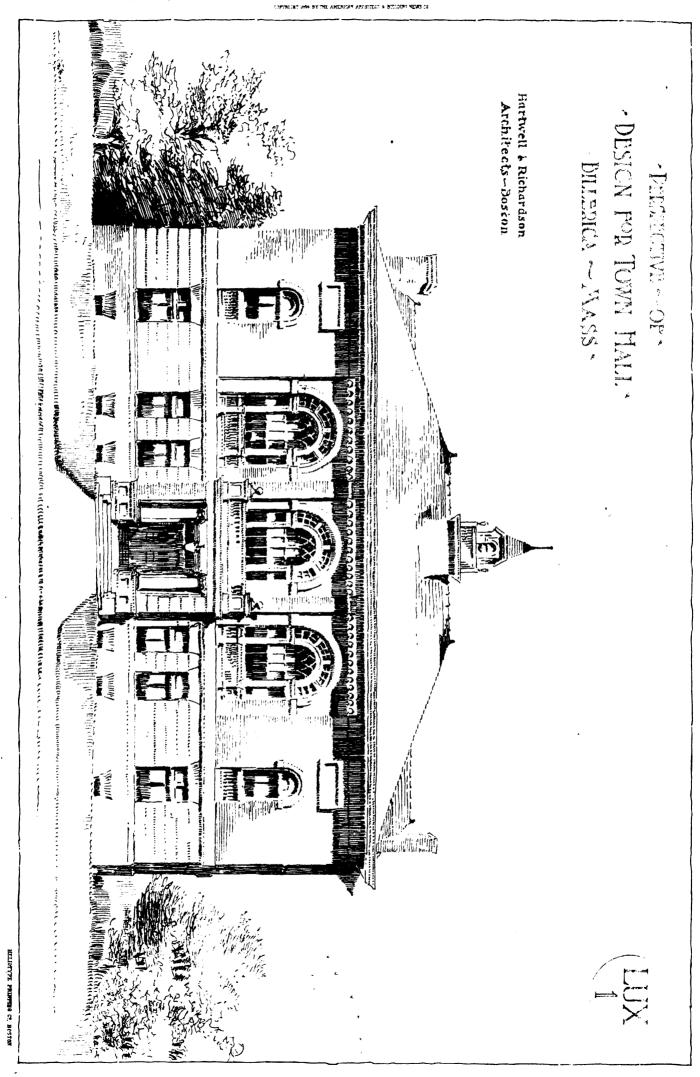
ZOLA AND A BUILDER. — Architecture and Zola would seem to be rather far apart, but none the less, this notorious novellist has been sued by a builder of Lourdes, presumably because of something said in the recent novel of that name.

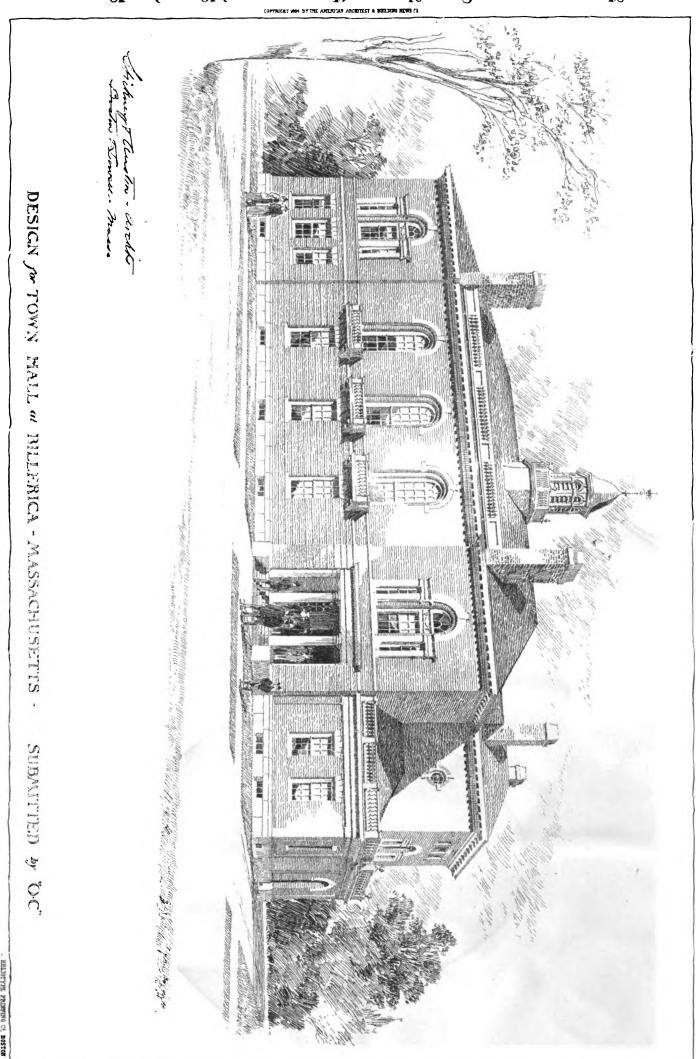


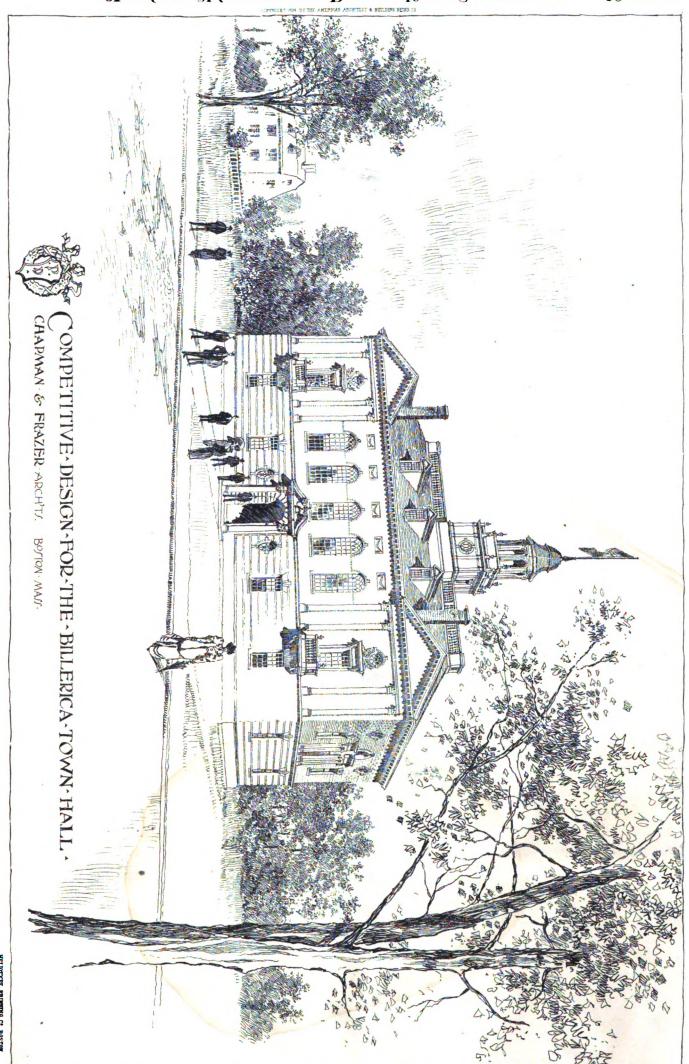
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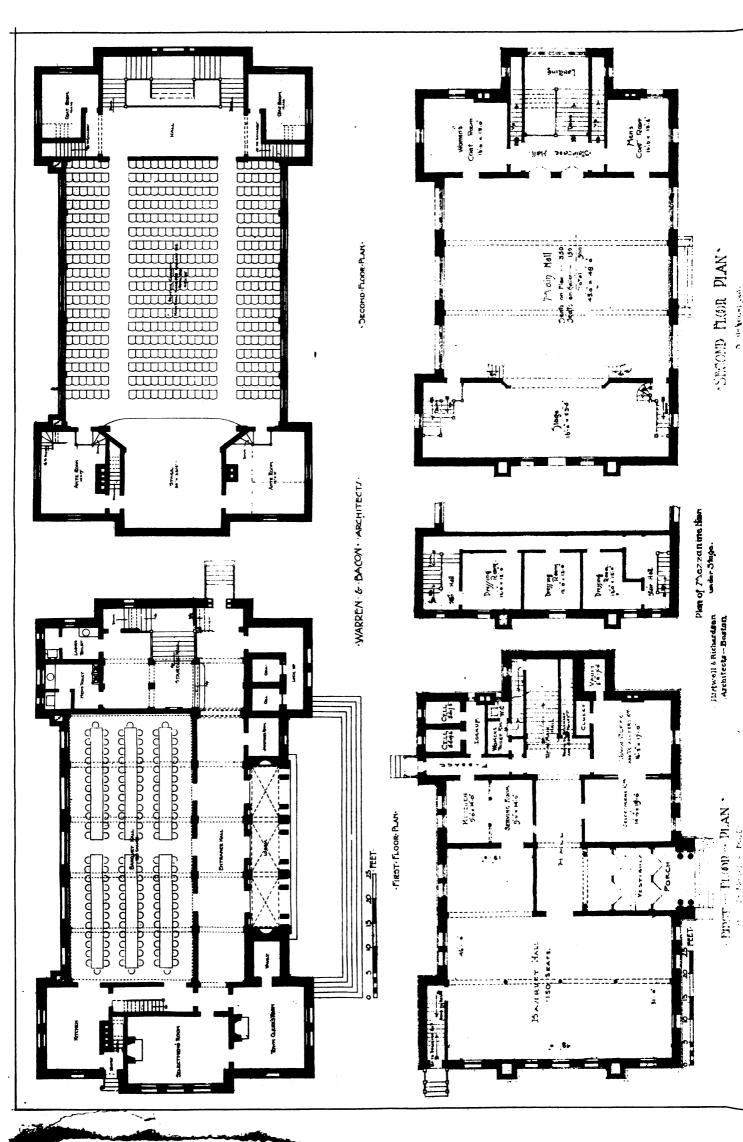
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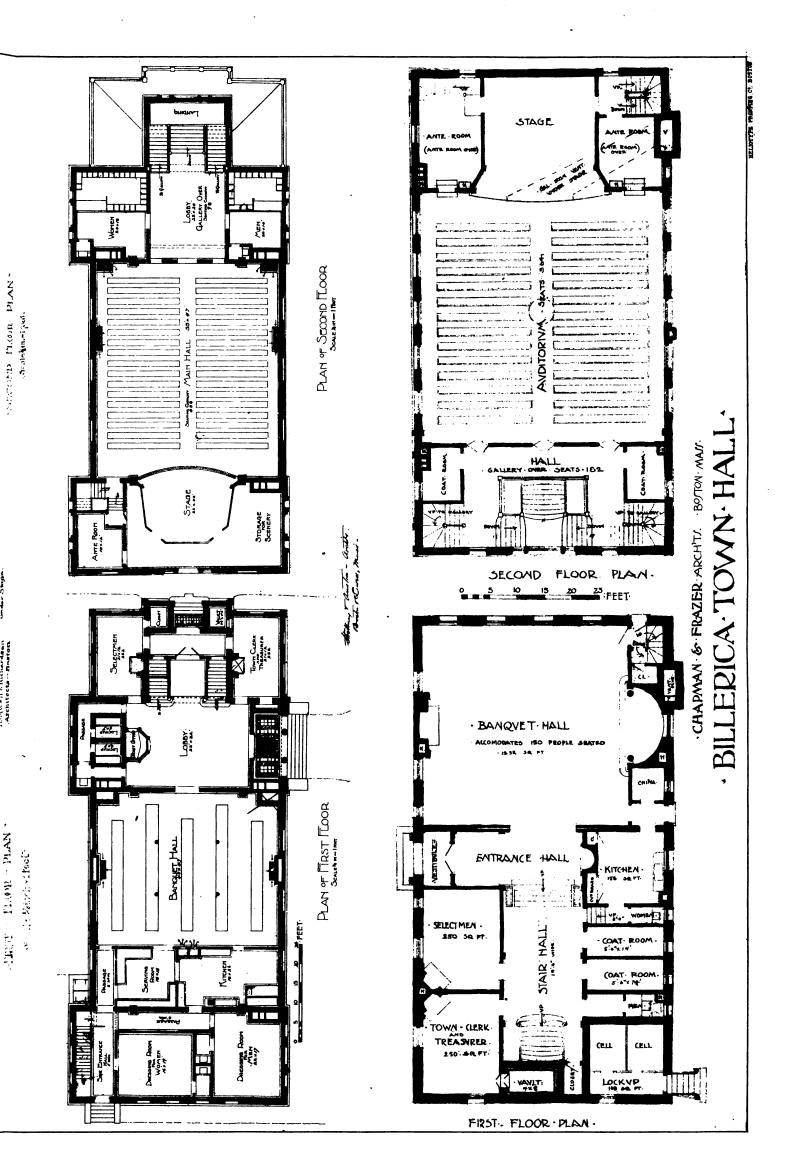




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PARTY-WALL decision was rendered recently by the Massachusetts Supreme Court which has a certain interest. An owner, whom we will call A, having occasion to increase the height of his building, was obliged, under the statute, to increase the thickness of the walls, which he did by lining them up with brickwork. On the walls thus thickened he built an addition, increasing their height. His neighbor, B, subsequently raised his own building, using, for his upper stories, the new part of the party-wall constructed by A. Thereupon A demanded that B should pay him, not only the value of half the wall that he used, but also that of the strip of land comprised between the old boundary-line of the lots, which was, presumably, in the centre of the original wall, and the centre-line of the wall as modified by the addition to the thickness, which had been made wholly on A's land. To put the case more definitely, supposing that the wall was originally twelve inches thick, with the party-line in the centre, and that A had been obliged to make it twenty inches thick by adding an eight-inch lining on his own side, he wished B to pay him for the strip of land four inches wide comprised between the centre line of the twelve-inch wall and that of the twenty-inch wall. B declined to accede to this demand, which, so far as we have heard, no one in Boston ever thought of making before, but offered to pay half the cost of the new wall that he was using. A carried the case to the Supreme Court, which gave a decision entirely in accordance with the common practice, to the effect that "there is no implied obligation on "the part of a land-owner to pay for additions to a party-wall "where the addition is built on the land of one owner, even "though it thickens and strengthens the wall"; saying further that "it does not make any difference if the defendant uses so "much of the wall as is on his own land to increase the height of his building." Most architects have been occasionally impressed with the one-sidedness of a usage, by which a man who owns perhaps six inches of a wall which has been increased to twenty inches or so by additions on his neighbor's side of the line can use the altered wall on exactly the same terms as if it occupied ten inches of his ground, instead of six; but the confusion which would result from making the boundaries of a man's estate depend on the additions which his neighbors might from time to time choose to make on their side of the party-walls would be so enormous, that the profession, at least, has reason to rejoice at the Court's decision.

HE building statistics of Philadelphia show very clearly the depression in business during the past two years. Philadelphia is renowned for the immense number of houses erected within its limits, about thirty a day being finished and handed over to their owners, but the average cost per house is small, as compared, for example, with the average cost in New York. In 1892, buildings to the value of about twenty-four million dollars were erected in Philadelphia; in 1893, the value was twenty-three and one-half millions; in 1894,

counting to September 1, which closes the official building year, the total is more than four millions less than in 1893. This makes a shrinkage in building business in the city in two years, of nearly eight million dollars, or about thirty per cent, which, as an average, means loss of employment and wages to thirty out of every one hundred workmen in the building-trades, from those employed in making brick, or cutting lumber, down to the hod-carrier on the actual work. condition in other large cities is probably about the same, although in Philadelphia, as elsewhere, there are signs of returning prosperity.

I N an answer to certain questions relating to the New York City-hall competition, propounded at the request of a number of competitors who have requested us to take action in their behalf, we have received from Mayor Gilroy the response that he is "unable to answer the questions for the Commission. It will require the Commission, or a majority of it, to settle the points in dispute." He thinks they "ought to settle it as promptly as possible and will call a meeting of the Building Commission for the purpose as soon as possible."

R. E. C. GARDNER'S remarks about Labor Day, in our last issue, might, we think, profitably suggest an inquiry whether the holiday itself, the very name of which should make every true American blush, ought not to be abolished, or, at least, transferred to the protection of some American saint or hero, in place of the walking-delegates to whom it is now dedicated. To say nothing of the absurdity of trying to make distinctions between the different sorts of "laborers" in this busy nation, every one knows that the establishment of the "Labor Day" holiday was extorted from State Legislatures by the relentless tyrants who rule over workingmen, partly to terrify their subjects, by showing them their power over legislation, and partly to secure an opportunity for terrifying the legislators themselves by parading their servile armies through the streets of the great cities. To increase the effect of their demonstrations of this kind, measures are, according to common report, taken which are quite characteristic of the system. In some of the Unions, to be absent from the Labor-Day procession, or to work on that day, is said to lead to the expulsion of the delinquent, and the withdrawal of the ticket which, in these days, is necessary to entitle a working-man to earn an honest living. What this punishment means is well illustrated by the case of a working-man who killed himself in Boston last Labor Day, or just before, because he had been expelled from his Union, perhaps for such a crime, or for the still more heinous one of working in the shop with a "scab," and had, in consequence, been unable to earn a support for his family. It has been observed that the Labor-Day processions of ticket-bearers have fallen off in numbers of late years, as if the people who earn their living by the grace of the labor magnates were not fond of exhibiting their bondage; and this state of mind is much to be encouraged. When a few hundred more men have committed suicide, or have had their skulls crushed with coupling-pins, or have been beaten to death, or thrown into rivers, or hounded into beggary, for disobedience to the labor tyrants, it may possibly occur to some one to see how a procession of "scabs" would look alongside the favorites of Labor-Day legislation. It would not do to expect too much from men who know that their oppressors hold employers and Legislatures under their thumb; but, if the element of fear could be removed, the "scab" procession would outnumber the other many times over, and would contain the best, because the most independent and ambitious part of the workingmen. To our mind, the Fourth of July would be an appropriate day for such a demonstration, and the Stars and Stripes should be the only flag displayed in it.

E sometimes hear people speak with incredulity of the idea that the industrial community in America can be ruled so absolutely by the comparatively small number of magnates who control associations, comprising, even in the cities, only about fifteen per cent of the actual number of working-men. These people underrate, not only the systematic terrorism by which the labor magnates secure obedience to their decrees, but the immense power that can be acquired by a small, compact body of men, working constantly and unscrupulously together for their common ends. Sir Arthur Helps, in his "Friends in Council," speaks of the assistance which a person who wishes to get on in life derives from membership in a small association, especially one of a religious character, whose members all know each other, and help to push each other forward; and the way in which the Government of the British Empire revolves around a little knot of representatives of a constituency smaller than the population of London shows what can be accomplished by a small political force, judiciously handled, and with only one interest to look out for. With us, the body of voters who would not dare to brave the disfavor of a walking-delegate is, in most cities, a large one, and "Labor," in the person of the wily plotters who contrive to put themselves at the head of organizations of working-men, can have from Legislatures almost any favors that it asks.

F architects were not perforce and professionally nomadic in their habits, it would be conceivable that the members of the American Institute of Architects would just now be looking forward with keen interest to the annual convention which is to be held in New York next month, as it would afford them a chance of inspecting the work done in that city in the eight years that have passed since the annual meeting was last held in the metropolis. But we fancy that there can be but a small number, even of those settled in the more remote towns, who have not visited New York several times within this period and noted how thoroughly the city has lost its gloomy and forbidding air, due to the habitual use of Connecticut sandstone which used to give the streets the air of being in the livery of "mitigated grief." Still, even for those who frequently visit the city, there has been enough new work done, even in the current dull times, to make the usual touring trips interesting and profitable. Moreover, there are several matters of considerable importance to come before the convention, which are likely to provoke a good deal of discussion - for instance, the matter of the Government buildings and the proper function of the Supervising Architect, which is just now in a very interesting, and, perhaps, critical state. It is probable, therefore, that there will be more architects than usual in attendance, and that from one cause or another those who can spare the time to attend the meetings are likely to find they have spent their time and money to rather better profit than usual.

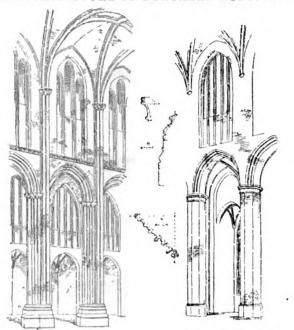
OIGNOR ANGELO NESTORE GUGLIELMINETTI, of Naples, has been impressed with the very sensible idea that, inasmuch as a great many people are now at work, in various parts of the world, on the problem of aerial navigation, and, for the most part, are carrying on their investigations without knowing what others are doing in the same direction, a great deal of time might be saved for them all, and the object for which they are working immensely promoted, by getting them together, and giving them an opportunity to compare their experiences, make and receive suggestions for avoiding difficulties which have been proved to be insurmountable, and examine the appliances and materials which industry now makes available for their purpose. For this purpose, he proposes that an international Congress of aërostatics and aëronautics shall be held at some place to be hereafter determined, to which all persons interested in the navigation or scientific investigation of the air shall be invited, and where the experiments which have been made in many parts of the world, with more or less success, shall be repeated and explained, papers read on different branches of the subject, and an exhibition held of silks and other gas-tight fabrics; cordage of the utmost strength and lightness; compasses and other instruments adapted for the navigator of the atmosphere; motors, propellers, engines, boilers, electric accumulators, and other machinery designed to combine to the utmost strength and lightness; gas-holders; compressors, and so on.

T is hardly necessary to point out how greatly such a Congress would hasten the progress of the science of aëronautics. In view of what has already been done, it may be considered certain that, before many years, the navigation of the sea which has the whole world for its port of departure and arrival, in which there are no reefs, or sand-bars, or waves, or tides, and where collisions would be almost impossible, will be as firmly established as the navigation of the ocean now is; and the race between skilful inventors to be the first in the

field with a practicable air-ship is already keen. More secretly, also, the rival military administrations of the great Continental nations are making strenuous efforts to surpass each other in the adaptation of the sciences of the atmosphere to the uses of war. The Russian War Office maintains already a regular department of aëronautics, and the brilliant results obtained by Lieutenants Renard and Krebs, of the French army, at their experiment station, are familiar to all the world. the German officers, meanwhile, have not been far behind is sufficiently attested by a diplomatic note which is reported to have been recently sent by the Russian to the German Government, complaining that, on two occasions, an air-ship of some sort had been observed to ascend from within the German territory, cross the frontier into Russia, and, after moving about for a while in the Russian dominions, return to Germany. Although diplomatic representations seem to have sufficed to check subsequent excursions of the sort, it is reasonable to suppose that, in case of war between Russia and Germany, the voyages of the Teutonic balloons would be resumed, and the advantages which they afford for inspecting Russian affairs without the permission of the police utilized to the utmost; and what the Germans seem to be ready to do, and the Italian officers in the Abyssinian War have already done, other people will surely attempt. Even the Japanese, whose keenness of observation makes up, to a great extent, for their lack of scientific tradition, might now contrive means for sending a flight of dynamite projectiles soaring through the air from the Gulf of Pechele toward Pekin; and the opportunities, which are constantly growing more numerous, for crossing frontiers without passports, are sure to be made available when occasion offers. Under such circumstances, the only protection against the superior knowledge of a rival is to know as much as he, and we may be sure that a Congress of aëronautics would attract the liveliest attention from all the great military powers, as well as from the peaceful public. Naturally, further details of the Congress will have to be left for future discussion. The first thing is to know whether such a Congress is practicable, and, for this purpose Signor Guglielminetti requests all persons who would be willing to take part in such an affair, to attend its meetings, or send notes of their experiments, or drawings, or models, or samples of materials, or to give to it their aid and countenance in any way, to send him their names and addresses. If his appeal meets with an encouraging response, he proposes to exert himself still further, in making personal application to manufacturers and inventors, and in other ways arranging the laborious preliminaries of such an undertaking; if not, he will be content, as he says, with the satisfaction of having made an attempt, even though an unsuccessful one, to furnish the science of aërostatics with the means of emerging from its present rudimentary state. No promise or engagement of any kind is asked from those who send their names; all that is desired at present is to see how far such a plan will be encouraged by those interested in the subject. Later, if the response to the invitation warrants it, the list of those who send their "adhesion" now will undoubtedly be published, as a help in attracting additional support; and further details will probably then be proposed, for approval. Those who are willing to lend the encouragement of their names to this most promising undertaking are earnessly requested to send their names and addresses to Signor Angelo Guglielminetti, Boscotrecase, Naples, Italy.

OME of our readers probably remember Mr. Thomas Hughes's book, "The Scouring of the White Horse," and others have perhaps seen the White Horse itself, which is still visible from the Great Western railway, not far from Oxford. The White Horse is a figure cut through the turf, to the chalky subsoil, on the side of a hill. The figure is three hundred and fifty-five feet long, and one hundred and twenty feet high. It is known, by documents, to have been in existence for eight hundred years, and is said, according to the common tradition, to have been cut to commemorate the victory of Alfred the Great over the Danes at Ashdown. Mr. Hughes, however, who, by the way, is now a judge, thinks that the figure dates far beyond Alfred's time. At present, the horse is nearly overgrown with weeds, and Judge Hughes appeals to the public to contribute money for "scouring" it, and keeping it scoured. As the cost of clearing away the weeds is only about fifty dollars, no great exertion on the part of the public would be needed, so that it is to be hoped that the appeal may

THE INFLUENCE OF THE HANSEATIC LEAGUE ON THE ARCHITECTURE OF NORTHERN EUROPE.'—I.



St. Nicholas's, Stralsund.

St. James's, Stralsund.

RARLY in the present session, in a paper written by Mr. Wm. Simpson, in continuation of several communications he had before made on the same subject, published in our transactions, the attention of the Institute was directed to certain peculiarities of architectural detail imported into one style from another wholly alien to it, practised in a far distant country, and belonging to an age long anterior to the date of the buildings in which they were found. We were invited to see in these works evidence of Classical influence in suggesting or modifying details of Indian architecture; and our attention was called to many interesting coincidences and similarities for which it was very difficult to account, but dences and similarities for which it was very difficult to account, but almost impossible to show to be the result of external instigation. To-night, however, I propose to deal with a question of artistic influence, more tangible, and scarcely less interesting than that suggested by Mr. Simpson—an influence which went far to mould or modify the architecture of Northern Europe, and to which much of the richness and beauty of the Northern Renaissance, now so frequently reproduced by the members of our profession, is due. My paper, therefore, will not be an account of how one distinct and alien style affected another, but its object will be, rather, to show how the living and progressive styles of succeeding periods became transformed ing and progressive styles of succeeding periods became transformed by the necessities or peculiarities of an influential and semi-political association of merchants who inherited and carried on the traditions of the earlier German schools at a time when German architecture was, to quote the recent address by Sir Frederic Leighton,² "stamped with a stateliness and nobility to which the days of the Minnesanger were surely more propitious than those of the rugged burghers who were soon to rise to power and to rule in the art-producing world."

In the course of several visits it has been my good fortune to pay to the lands about the Baltic Sea, I have been much impressed by the similarity existing between the buildings, however widely they were scattered, and however divided were the provinces by ethnographic or political differences. In other countries more or less homogeneous in their governments and people, such as France or Spain, strong local differences in style always existed; but over the Northern Europe which stretches from the sand-dunes of the English Channel to the granite islands of the Gulf of Bothnia, there can only be said to have been one style carried on throughout the Middle Ages - a style quite dissimilar to those of the rest of the Continent, and executed with a uniformity of detail, marking a distinct and complete school. There is nothing in the geological conditions of the countries to account for such coincidences; and the similarities, so obvious, were evidently due to other than merely geographical or political accidents. The history of these countries during the tenth and eleventh centuries, as told in such sagas as the Jomsvykinga Saga,³ is little more than a catalogue of wars and sieges; and when, later, the power of the Hansa League became dominant, this authority was only maintained, outside the limits of its own States and settlements, by constant fighting. At no time were those States over which the power of the League became paramount ruled by any united Government, whilst the racial differences were as marked from the earliest period of authentic history as they are to-day. Whence, then, came the force which welded into one

architectural province countries divided by continuous warfare, by

distinctions of race and by language?

The origin of this architectural uniformity is due to causes different from those which have ruled in other lands; and the secret of it was suggested in a paper read before the Institute in 1850 by Mr. Charles Fowler, Jr., in which he says, quoting from Kugler's Kleine Schriften: "The Germanic style is developed in a peculiar manner, on the coasts of the Baltic, and in some of the adjoining districts of Germany, viz, Holstein, Mecklenburg, Pomerania, the Old and New Mark Brandenburg, Prussia, Curland, Liefland, and also in the Skandinavian countries. These countries were connected and very much influenced by the confederation of the Hansa towns, and it is probably to this influence that we may ascribe much of the similarity of style visible in the buildings of the districts referred to." Rosengarten goes farther, and says: "A certain uniformity is peculiar to these buildings, which is owing principally to the influence of the Hanseatic League, but partly to the power and authority of the Teutonic Knights."

No attempt to follow up the clues pointed out as leading to the solution of this architectural problem seems to have been made, and the subject is too large and the countries involved too extensive and scattered for any one architect still engaged in practice, to deal with in anything like an exhaustive way. But feeling that it is a subject which should not be neglected, I have now made an attempt to put together such information as I have been able to acquire, with the idea of sketching the outline of a theory, to be filled in and corrected heresketching the outline of a theory, to be filled in and corrected hereafter by those who have further information or personal acquaintance with the buildings. It has already been my privilege to call the attention of the Institute to some of the Baltic provinces, though I had to lament that so little published information was available on the subject. I therefore feel the less diffidence in contributing the little knowledge I have gained towards the history of what K steep little knowledge I have gained towards the history of what Kugler so aptly calls the "Baltic style."

At the risk of reciting some facts which must be known to many

of you, without the knowledge of which, however, the subject might be unintelligible, I propose to give, as succinctly as possible, a history of the rise and progress of the League, and afterwards an account of the characteristics of the Baltic style, together with some of the most marked features in its arrangements and details; and, later, to endeavor to show in what way it affected the architecture of surrounding countries, and how far the influence of the later phases of the style still survives. But, although I shall instance peculiarities which I consider due to the influence of the Hansa, I at once disclaim any thought, with my present incomplete knowledge, of laying before you any definite and perfected theory, or of riding an architectural hobby to death.

The Hansa League was an association first of individual merchants, and later of merchant cities, which came to exercise considerable political power over all the countries bordering on the Baltic Sea. The word itself is Gothic, and is found in the Gothic version of the Scriptures by Ulphilas, a copy of which is preserved in the library at Upsala, wherein it is used to signify a "troop." The use of a Gothic word for the League's description is easily understood when one remembers how important a part merchandise played among the Scandinavian peoples, and that the great city of Joms-borg, called also Winetha, the Venice of the North, was founded by Harald of Denmark in the tenth century, and became the earliest great trading port and market of the Baltic coasts.⁸ I have prepared a chronological table of the principal events connected with the rise and progress of the League, which forms a compendium of its history, from which it will be seen that for a long period there were associations of German merchants to whom were accorded were associations of German merchants to whom were accorded special privileges in various countries, but that it was not until the middle of the thirteenth century that the League became a political entity. The history of the League, therefore, divides itself into two portions—the earlier times, when it was simply an association of traders, during which period the merchants of Cologne appear to have taken the lead; and the later period when, by force of circumstances, the cities of the Baltic coast had been compelled to unite for political purposes, and Lübeck became the head and chief of the whole League. Thenceforth the history of Lübeck becomes the hiswhole League. Thenceforth the history of Lübeck becomes the history of the Hansa.

The City of Lübeck was founded in 1143, and a few years later it

was incorporated with the Duchy of Saxony. Its rapidly growing importance, due to its position at one end of the landway from the dtic to the North Sea, induced Duke Henry to transfer to it from Baltic to the North Sea, induced Duke Henry to transfer to it from Oldenburg, the seat of the bishopric, and in 1164 the first cathedral, portions of which still remain, was consecrated. The destruction of Jomsborg, at the mouth of the Oder, which scattered the merchants of that city among the towns of Wendland and Pomerania, still further enhanced its importance, and in 1226 it was declared by the Emperor Frederick II a free Imperial city. Immediately afterwards it became engaged in a contest with Denmark, and defeated its nearly supremacy in an engagement at its fleets and destroyed its naval supremacy in an engagement at the mouth of the Trave. But, in spite of this, the position of Lü-beck was insecure, and it suffered from land thieves, who preyed

¹ Read at the general meeting of the Royal Institute of British Architects, Monday, May 28, 1894, by J. Tavenor Perry, [A] and published in the Journal of the Institute.

² Address to the Royal Academy Students, December 9, 1893.

³ Du Chaillu, "The Viking Age."

^{4&}quot; Mediaval brick buildings in the northeast of Germany, and on the Baltic coast." Transactions, 1873-74.

5 Rosengarten's "Handbook of Architectural Styles," English trans. London, 1886, p. 359.

6 Transactions, 1873-74, pp. 15-31.

7 "Encyclopædia Britannica," art. "The Hansa."

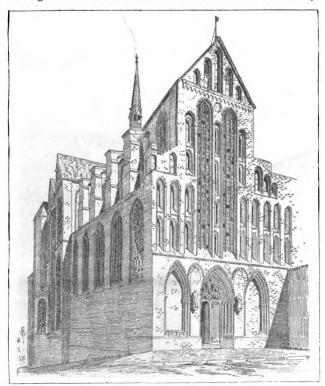
8 Sharon Turner, "Anylo-Saxons"; also Du Chaillu.

upon its commerce and intercepted its communications with Hamburg, which were essential to its free access to the North Sea; and a treaty was made between the two cities for the protection of the ways between Travemunde and the mouth of the Elbe in 1241, and this treaty inaugurated the second period of the League, and the supremacy of Lübeck among the cities of the League became firmly established.

Within a few years of this arrangement between Lübeck and Hamburg, the power of the League was felt all over the north of Europe. A treaty was made with Hakon, of Norway, for the trade with Bergen, and storehouses were erected in London and Bruges. At Damme, the important port of West Flanders, we find Roger of Lübeck and Jourdain of Hamburg negotiating for special privileges for the League; ¹ and in 1267, London on the one side, and in 1276 Novgorod on the other, became cities allied to the League. The first serious rebuff the League encountered was in the capture by the Danes in 1361 of Wisby, a city which to a great extent had succeeded to the position of Jomsborg, in the eastern Baltic; but this war with Denmark tended still further to consolidate the power of the League, and, on the signing of the treaty of Stralsund in 1370, it attained the zenith of its power. At this date it is believed that as many as sixty-four cities and towns were confederated, and fortyfour in foreign States were allied.

In the long list of these places, of which I have prepared a table, it will be seen that nearly all the confederated towns are to this day storehouses of architectural art; and that, although wars in Old Russia and Metropolitan improvements here, have swept away all buildings of the League in Novgorod and London, in most of the allied towns evidences are yet apparent, in the architectural details or character of the buildings, of the influence exercised over the people of these foreign places by the merchants of the League.

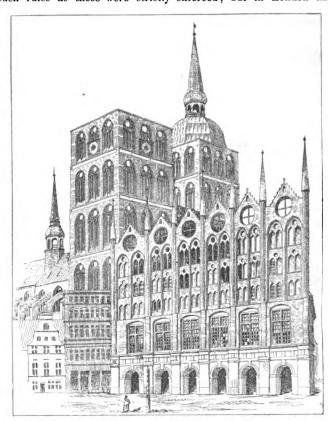
The relations which existed between the League and its confederate and allied towns were peculiar. Over the former, in spite of independent princes who reigned over the States in which the towns were situated, its rule was more or less absolute; for cities, in order to enter the League, were required to have their civil jurisdiction in their own hands, though they were allowed to acknowledge a superior lord; 2 but the allied cities only received colonies, or settlements, rior lord; 2 but the allied cities only received colonies, or settlements, or were visited from the head settlement, or Kontor, by the merchants trading under the auspices of the League, with special privileges, either conferred by the rulers of these foreign States or wrung from them by its power. The foreign settlements which formed the great emporia of the trade were London, Bruges, Bergen and Novgorod, and the history of the foundation of each of these settlements is interesting. In these the merchants lived apart from the native reconstitution in all most conventual seclusion, but their mode the native population in almost conventual seclusion, but their mode of living was rather founded on the rules of the earlier Scandinavians than on those of later monasticism. Thus Jomsvykinga Saga states that Pálnatóki, the Jarl of Fjon, who founded the city of Jomsborg in Wendland, ordered that "no man older than fifty, or



St. Katherine's, Lübeck.

younger than eighteen winters, could be received in the following of Pálnatóki." "Any one who committed what has now been forbidden, was to be cast out and driven from the community." "No one

should have a woman within the burgh, or be absent from it more than three nights." ³ In Bergen and Novgorod, where the merchants than three nights." 8 found themselves settled among a more or less hostile population, such rules as these were strictly enforced; but in London and



Town-hall and St. Nicholas's, Stralsund.

Bruges, where their neighbors were friendly and not altogether alien in race, they appear to have entered into the duties, as well as the privileges, of civic life.

The history of the London Hansa, the last traces of the buildings which were only destroyed when the Cannon Street Railway Station was erected, is particularly interesting. It would seem that when Henry III, in 1259, confirmed the already granted privileges of the League, or in 1267, when Lübeck and Hamburg were acknowledged as the heads of it, the merchants were required, in acknowledged as the heads of it, the merchants were required, in return for their civic advantages, to perform certain civic duties. These appear to have been mainly the repairs and protection of Bishop's Gate, which they were required not only to maintain in structural repair, but to defend, if London were attacked by an enemy. That these duties were not merely honorary is shown by an event which happened in 1281, when, "Henry Wales being mayor, a great controversy did arise between the said mayor, and the merchants of the Haunce of Almaine, about the reparations of Bishop's Gate, then likely to fall, for that the said merchants enjoyed divers privileges in respect of maintaining the said gate, which they now denied to repair," with the result that they had to pay 210 marks sterling for the repair of the gate, and undertake to pay one-third of the future costs of its maintenance. This gate was again rebuilt in 1479, and in 1551 the merchants were preparwas again rebuilt in 1479, and in 1551 the merchants were prepar-ing materials for its rebuilding when the League in England was dis-

The establishment of the League in Bruges, where some of its buildings still remain, was not unlike that of London, and the members of it associated more or less with the citizens; but those of Bergen and Novgorod were very different. In them the Jomsborg rules were strictly adhered to, and the surrounding population kept at arm's length. In both of these cities the merchants lived apart at arm's length. In both of these cities the merchants lived apart in a walled enclosure, which also contained their church, and within which they exercised despotic sway over their own servants and apprentices. Novgorod, which was perhaps the richest and most important of the foreign stations, was the envy of the neighboring Muscovites, so that their saying ran, "Who can withstand God and the great Novgorod"? But it was destroyed by Ivan the Terrible, when he captured the city in 1477. The buildings of the settlement of Bergen, however, to a great extent remain. When complete they formed a long range of warehouses and lodgings on the north side of the haven, the site of which is still called "the German bridge," connected with their own Church of St. Mary, which had two west lofty gabled towers and a polygonal apse without chapels. Within their enclosure they ruled by their own statutes, independent of the Norenclosure they ruled by their own statutes, independent of the Norwegian laws; and such authority did they assume over the native

5 Pennant. 6 " Civitates Orbis Terrarum," 1572.

^{1&}quot; Histoire de la Ville de Damme." By L. Macquet. 2" Antiquary," vol. iv, p. 69.

Du Chaillu, "The Viking Age." Stow's "Survey of London," Thoms' ed. 1842, p. 87.

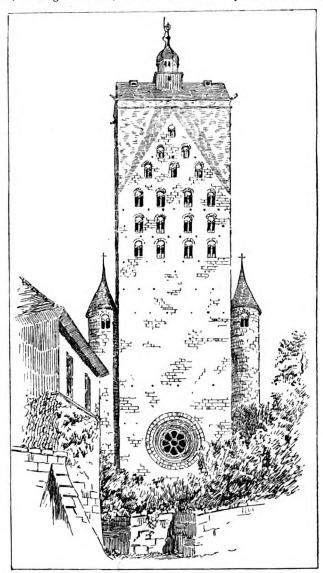
population that, in 1455, when a dispute arose between them and the citizens as to some trading between the Flemings and the latter, they attacked the king's governor, and, driving him and his people into a church, burnt them and it together. The Norwegian king was not only too powerless to resent this turbulence, but was compelled to confirm the League in its privileges, by an order that no Flemings should trade with Bergen.¹

Such high-handed proceedings in foreign countries received rate?

Such high-handed proceedings in foreign countries provoked retali-ation, and from 1450 to 1550 we find the League at constant war with surrounding States; at the same time, the growing importance of the trade carried on by the English and Flemish merchants gradually undermined its power, and at the outbreak of the Thirty Years' War it suddenly collapsed. Nevertheless, the wealth of its individual merchants, and the continued prosperity of many of the confederated towns uneffected by foreign wars made this an era of great erated towns unaffected by foreign wars, made this an era of great architectural activity, and to this period of the League's political decline we owe some of the finest and richest buildings in the Re-

naissance architecture of Northern Europe.

In this brief résumé of the history of the League, we have seen how, in its gradual rise, the centre of authority shifted from the



West Tower, Paderborn Cathedral.

banks of the Rhine to the shores of the Baltic, and the effect of this change on the architecture of the district is very apparent. The earlier influences of Cologne, first on Hildesheim, and then, through Hildesheim, on Denmark and the Baltic coasts, are manifest in the great apsidal churches of Ribe, Roeskilda and Lund; but when, later, Lübeck became the head of the League, she also became the centre of architectural influence, and the ecclesiastical buildings of

centre of architectural influence, and the ecclesiastical buildings of the fourteenth and fifteenth centuries in the north of Germany were much more affected and inspired by the Dom of Lübeck than by the far finer, but less German, Cathedral of Cologne.

The consequences of this preponderating authority of Lübeck on architecture were of various kinds. The peculiar social and political organizations of the League were made known in the surrounding and foreign countries with which its merchants traded, and suggested a class of buildings hitherto unknown. Wherever the agents of the a class of buildings hitherto unknown. Wherever the agents of the League settled, they seem to have indoctrinated the people in the mysteries of brick-making, until, in countries where stone and

1 Creighton and Wheaton's "Scandinavia."

granite had always been used, the new-fashioned brick eliminated the Besides this, there were peculiarities of detail and nobler material. design, partly arising from these causes, and partly due to mere localisms, which are evident in the buildings throughout the countries controlled by the League.

The effect of the League's influence on the municipal buildings of Northern Europe is so obvious as to require but a passing notice. We have seen that although in the great foreign settlements the merchants erected for themselves, and resided within, their own enclosures, yet, in the smaller towns with which they traded and in which they had no permanent settlement, their influence and their requirements promoted the erection of guild and trade halls and The important part the merchants took in the affairs tom-houses of Damme I have already mentioned; and the beautiful town-hall still standing in that now forsaken little town attests to their dominating influence there. To them also, doubtless, may be attributed the erection of many of the municipal and guild buildings of our own eastern counties, such as Norwich, Lynn and Boston, which were

all towns of the League.

Another, and much more noticeable, circumstance was the gradual abandonment of stone where it had hitherto been used, and the almost universal adoption of brickwork in the countries over which atmost universal adoption of Drickwork in the countries over which the authority or influence of the League extended. The home of the League and its principal cities were in Wendland, which embraced Pomerania, Mecklenburg and parts of Lower Saxony, a country of great sandy plains sprinkled over with huge granite boulders brought down by the ice from higher latitudes. Here stone was only to be procured by importation from Sweden or elsewhere at great expense, and the architecture which great up were already architecture. procured by importation from Sweden or elsewhere at great expense, and the architecture which grew up was almost exclusively of granite and brick. In Stralsund, however, which had closer dealings, perhaps, than any other of the Hansa ports with Sweden and Wisby, stone continued to be used for ornamental purposes in connection with bricks; and in the beautiful Church of St. Nicholas erected between 1311 and 1330, the capitals, bases and string-courses are of Swedish limestone. The story of this brick architecture as it existed in Pomerania has been residue told 2 but string-courses are of Swedish limestone. The story of this brick architecture as it existed in Pomerania has been mainly told,² but the story of its overrunning stone-producing countries is yet to tell. Throughout Sweden and Norway are fine beds of building stone, easily procurable, but in the Hansa town of Bergen the two churches easily procurable, but in the Hansa town of Bergen the two churches were of brickwork; Upsala Cathedral was mainly brick; and although the earlier work of Linköping, Lund and Orebro, was executed in stone, the later additions on the western fronts were wholly in red brick. In Livonia, again, where limestone abounds, such old buildings as still remain in the Hansa towns of Reval and Riga are mainly of brick. The case of Wisby and the buildings of Gotland are wholly exceptional. This island, like the neighboring one of Orland, contains good building-stone, of which most of the churches were built during the period when Wisby, having risen into importance after the destruction of Jomsborg, looked to Cologne as the head of the League; and, besides, the capture and destruction of Wisby by the Danes, although it consolidated the power of the League, came too soon to allow the later influence of Lübeck to considerably affect its buildings.

[To be continued.]

NOTES ON STABLE BUILDINGS IN LONDON.

T has been recently calculated that there are about 80,000 horses working for their living in the streets of London. Of this total, which does not include private carriage and riding horses, about 20,000 spend their lives between the shafts of the London "omnibus," 10,000 draw street-railroad cars, 15,000 are "cab" horses and 27,000 are employed in the carrying trade of the English metropolis. Of these latter, about 6,000 belong to the railroad companies who in England perform an extensive street-cartage business in connection with the collection and delivery of freight. Of the rest, about 3,000 are brewers' horses (and these are, as a whole, the finest of their class), 1,500 are employed by coal merchants, and a like number drag about the public dust-carts which collect refuse from the streets and houses.

As most of these animals are employed in the busiest part of the metropolis, it follows that they must be housed in positions conveniently adjacent to the scene of their labors. Consequently, a ruling consideration in the construction of stables for London horses is the great value of the land on which they have to be erected. This was not so much so in the past, however, when many places were suburbs which are now amongst the most important parts of London, and therefore we find that most of the old-fashioned stables — those, for instance, belonging to old-established firms of carriers or brewers — are built in a very straggling manner and cover a large area of ground. Not so the stables of recent erection, which have been, as a rule, built in the most compact form possible. Thus in a new block built by the Great Western Railroad close to its terminus at Paddington there are no less than four floors of stables, one above the other. The top floor being almost as high as the adjacent hotel with a look-out down on the station roof. The headquarters of Messrs. Carter, Paterson & Co., the well-known London carriers, are in three floors, one over the other, and the London Road Car Company's depot at Fulham, which accommodates 700 horses and is generally considered the finest in Britain, consists of stables in two



^{2 &}quot; The Medieval Brickwork of Pomerania," Transactions, 1873-74, pp. 15-31.

stories built around a quadrangle. For the handling and management of a large stud of horses, stables built in such compact forms as these present some advantages over old-fashioned straggling buildings, as they can readily be divided into sections and thus the work of each horse-keeper can be clearly defined. Moreover, for light and ventilation, animals placed on the upper floors of a London building will generally be better off than those whose habitations are on a level with the ground. When the housing of working-horses on a large scale in the heart of London first became common, these considerations were little regarded, and horses were often, for the sake of economy, stabled in the basement of buildings used for other purposes. Thus a portion of the large stud employed by the Northwestern Railroad are housed beneath the railway station at Broad Street. The newest stables built by that company, however, stand on their own ground and are lofty, bright and airy. The most obvious objection to stables built on several floors is the labor entailed in taking in supplies of food and bedding and in removing manure, etc. In most large buildings of this type, however, hydraulic machinery is provided for these purposes.

An excellent example of a London stable building of the newest

and most approved type is afforded by a structure recently erected by the Great Northern Railroad, close to its station at Farringdon Street in the heart of the City of London, for the accommodation of some 200 horses employed in street-cartage work. The two upper The two upper floors only of this building are devoted to stables, the basement having been utilized for a warehouse, while on the ground-floor the railroad-carts load and unload as well as remain under shelter, while the horses are housed overhead. This arrangement is a healthy reversal of the old-fashioned plan alluded to above. The stables are ranged around the outer walls of the building in the form of a quada glass roof. This roof is raised above the inner walls of the building so that an opening is left all around through which a constant current of air passes up the well-hole from the street-entrance on the ground-floor. Moreover, each stable has windows in its outer rangle, the centre of which consists of an open well-hole covered by wall fitted on the hopper principle. Running around the well-hole on each floor is a balcony, which is approached by two inclined ways, one on each side of the building, from the floor below. At the top of each inclined road, on the balcony, a water-trough is placed, so that the animals can be watered easily, both on entering placed, so that the animals can be watered easily, both on entering and leaving their stalls. From each balcony admission is gained to the stables on its floor. These are divided in each case into seven sections, each of which has an opening on to the balcony protected by a sliding-door. This enables each section to be isolated from the by a sliding-door. other in case of necessity, and as the door slides on runners, it is impossible for a horse to get foul of them when entering or leaving its stall. Each section contains stalls for from 10 to 15 horses as well as a loose-box for sick or vicious animals. The stalls are 9 its stall. Each section contains stalls for from 1 well as a loose-box for sick or vicious animals. feet 6 inches long by 6 feet broad, and the loose-boxes average 10 feet by 12 feet. The average ground-area allowed per horse is 90 feet and the cubic space varies from 1,000 feet to 1,440 feet. 90 feet and the cubic space varies from 1,000 feet to 1,440 feet. These dimensions meet the requirements of the best authorities on the subject. The inside walls of the stables are faced with glazed bricks, which are excellent both for light and cleanliness. Standing divisions made of pitch-pine are provided between the stalls. Swinging divisions are, perhaps, better for ventilation and sanitary reasons, but large horses, such as those here housed, are apt to injure themselves against these. Each division is capped sanitary reasons, but large horses, such as those here housed, are apt to injure themselves against these. Each division is capped with iron to prevent crib-biting and a kicking-board of wych-elm 6 inches wide, which can be renewed when worn out, is fastened close to the ground against the hither end of each partition. The mangers are of salt-glazed earthenware and are made in two pieces, so that if one is broken, the other is still available and can be retained while the broken one is replaced. Flush boarding is nailed from the manger to the floor of the stall, so as to remove the risk of a horse injuring itself by knocking against the underside of the manger when rising from a recumbent position. No hay-racks are provided, as chopped food only is given.

In stables built in stories, paving and drainage are important matters, for unless they are carefully provided for, urine will leak

In stables built in stories, paving and drainage are important matters, for unless they are carefully provided for, urine will leak through from the floor above onto the horses below. In the building now being described, a patent metallic paving has been used. This is laid in situ on a loose three-inch cover of burnt ballast, and channels are formed in it after it is laid down. The loose cover prevents the pavement cracking when the iron girders which support the floors expand or contract with changes of temperature. The drainage is all carried off from the surface in hanging pipes and there are no cesspools. A store-room for provender, bedding, etc., is provided on each floor, and the sacks of food and bales of peat-moss for bedding are hauled up the well-hole by an hydraulic-power pulley, and received on falling flaps which project from each side of the balconies to form a bridge. For the removal of the manure and stable refuse, a chute is provided from each balcony, the manure falling into a receptacle on the ground-floor from which it is carted away. There is a men's mess-room on the top floor and part of the building is also devoted to a residence for the chief horse-keeper.

C. H. G.

EXPEDITING THE CURRENT IN MEXICAN SEWERS. — A new project for the sanitation of the sewers in the City of Mexico, at a cost of about \$25,000, calls for the building of some twenty-five windmills in different parts of the city to rotate paddle-wheels in the sewers and quicken the current to one metre per second. — El Universal.



JULY and August, the holiday months, do not afford much "copy" for letters on architectural or engineering matters. Every one is trying to get a little "dolce far niente" before the short summer gives place to the dreary period of waiting for snow. In periods of general trade depression, the professional man, who has to take his share of the enforced idleness, feels it his duty to be "on the spot," although the work at his office, if he be fortunate enough to have any at all, hardly requires his presence. Especially is it so with the younger men, with whom it does not "look well" to be absent from the office, though they may have nothing to do. So they have gone to their offices, putting in an appearance, and trying to look busy, inwardly growling at the fate which necessitates such bondage. Occasionally, to break the monotony, they slip off from the office, to take a modest trip, devoutly hoping that their best clients will not happen to find them inattentive for the moment to the details of their business; but now, at last, the time has come when without pricks of conscience we may all get a "breather," and when in fact in the minds of some it looks better to take a holiday than to stay at home. The summer resorts near at hand are full, office-hours are cut down to the minimum, the professional man trots round in straw hat and flannels, bound to get off to his "retreat" by the first afternoon train or boat, and to make the most of the dullest and hottest summer on record. The writers on the daily press are hard up for subjects, so much so that we actually find a leading newspaper appearing with a full column on that much abused and miserably underrated honorable profession, the architect's. We can imagine the author gazing out of the window while he sits at his desk, his head on his hand, his elbow on his blotter and his pen between his molars getting chewed into pulp, while he tries to draw inspiration from the thinly populated streets on which his sleepy eye just rests. Presently he sees a well-known figure

Is the public so miserably wanting in intelligence that the majority positively appreciate an "ugly" building and cannot by tuition or inspiration feel the charm of real art? I do not think we find it so in daily life; but though I do not intend to go into that subject here I may give voice to the thought such remarks engender. How is it that, outside professional journals, a good article on architects or their work is the rarest that finds its way into the columns of the daily press? The thread-worn notion of "educating the public" has surely had its day and might be allowed to rest, as the public persistently, to all appearance, refuses to be educated by what it sees emanating from various architects' offices. The profession somehow is not popular. It is in general regarded as superfluous, if indeed its purpose is understood, but here an alarming ignorance becomes apparent and many otherwise fairly well informed are found speaking of an architect as "getting the contract for such and such a building," or else they regard him as simply a clever draughtsman. There certainly is subject enough for "leaders" concerning the profession, if only a sufficiently intelligent writer could be found to take the matter up, but if a "daily editor wants to give us a lift" he should at any rate give the subject to an intelligent writer.

should at any rate give the subject to an intelligent writer.

The Chignecto Ship-railway is again demanding public attention. It will be remembered that this proposed railway, now partly completed, was projected for the purpose of carrying vessels across the narrow neck of land that joins Nova Scotia to the mainland of Canada, the object being to save the long sea voyage round the Nova Scotian peninsula, and the unloading of the inland-water grain vessels and loading again into more sea-worthy craft. The railway takes the place of a projected canal which was estimated to cost anywhere between seven and fourteen millions of dollars, the cost of the railway scheme being set down as four millions and a half. The works were to have been completed within a certain number of years, in which case the Dominion Government had promised a bonus of \$170,000 a year for twenty years, to help the Company along. The Company failed to keep its part of the agreement and the subsidy was forfeited. Now, however, fresh proposals are made by the Company for the purpose of regaining the subsidy, but the

practical question of how the scheme will pay is more thought of than when first the grant was promised, and it is doubtful, or appears to be so, as to whether the railway could ever be made to pay. tariff of fifty cents a ton is proposed for lifting and hauling the vessels, and twenty-five cents a ton for the cargo, and this would be the entire source of the revenue, so that a vessel of a thousand tons carrying a cargo of a thousand tons would cost its owners seven hundred and fifty dollars. With everything in good condition, a vessel would be taken out of the water at the Bay Verte and deposited in the Bay of Fundy in two hours and a half—an immense saving of time as compared with the long and exposed sea route; but it is a superior of the part of the second terms of the second te question as to whether there will be enough vessels to make these mighty engineering works of practical use. The cost of the railway with docks, gates, hoisting apparatus, etc., is enormous, and the difficulties to be overcome were considerable. If the scheme is ever completed, it will certainly be entitled to rank not merely as the first of its kind, but among the great engineering works of these latter days. The great lock-gates are themselves a wonderful feature. being of immense height, on account of the changing levels of the

tides and immense strength to resist the tremendous force of storms.

The celebrated case of the Queen vs. Larkin, Connolly & Company has at last reached a settlement. The details of the case are probably fresh in the minds of readers, so I need not repeat them here. A compromise has been effected and approved by the presiding judge. The result of the settlement is that a balance of \$45,000 is found due by the firm, as the balance of claims and counter-claims. No costs are to be paid by any party. The plant in British Columbia is to remain the property of the firm and they are released from a large claim for harbor-dues, ground-rent and such things. When the settlement was announced, Mr. Justice Burbidge said "I think all parties may be congratulated upon the termination of the litiga-I am satisfied that the public will feel as the Court feels, that its interests have been protected in any agreement or settlement which has been made by the distinguished gentlemen who represent the Crown; and I have no doubt the defendants must feel, that their interests have been entirely safe, and that everything that is best for them has been done by the action of the learned gentlemen who have acted for the defence. I quite concur in the remarks just made, that the confession of a judgment in this matter is not, of itself, to be taken as an inference of any personal wrong-doing. They would be liable, and would feel themselves, as honest men, have the probability of the second positivities. bound perhaps to make some restitution, where they were responsible for the acts of partners who had done wrong without their knowledge. In the end, considering the great expense and anxiety of litigation, I think that not only the public interests, but the interests of the defendants themselves must be served by the settlement."

The great water highway from the ocean to the lakes through Canadian territory is just now interesting an immense number of people. The United States has almost as much concern in them as the Dominion, and this is testified to by the numbers of delegates from, or representatives of, Boards of Trade and other commercial associations who have accepted the invitation of the Toronto City Council to attend a convention, at which is to be discussed the advisability of deepening the canals, by which vessels passing up and down avoid the dangers of rapids, water-falls and so forth, that down avoid the dangers of rapids, water-falls and so forth, that render the rivers unnavigable at parts. The long chain of canals from the Upper Lakes is no mean feature as a commercial highway, even as they are at present, but it is thought that by deepening and enlarging them the water-carrying business might be greatly improved for both countries. The convention will be a notable one, and it is expected that from fifteen hundred to two thousand gentlemen will attend. Eminent engineers, well-known merchants, Members of the Dominion Parliament and local legislatures, and Members of the House of Representatives of the United States have signified their intention of being present, and their deliberations will be watched all over the world, as the event is of international importance.



TWENTY-EIGHTH ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS. — CIRCULAR OF INFORMATION, NO. 2.

HE Twenty-eighth Annual Convention of the American Institute of Architects will begin its session at the rooms of the Architectural League, in the Fine Arts Society's Building, 215 West 57th Street, New York, on Monday, October 15, at 10 A. M., and will continue in session day and evening on Tuesday and Wednesday, October 16 and 17, closing with a "Smoker," an informal reception in the rooms of the Building Trades Club, 117 East 23d Street, tendered by the Mechanics' and Traders' Exchange of New York, Isaac A. Hopper, *President*.

The headquarters of the Institute will be at the Hotel Nether-

lands, 59th Street and Fifth Avenue, where rooms can be obtained for \$2 per day and over, for a single person, or \$3 and over for a single room for two persons on the European plan, or \$4 and over on the American plan.

As previously announced, this Convention is very important in

the history of the Institute, as vital changes in the relations of the Chapters to the Institute are proposed, amendments to the By-laws

The Committee of Arrangements take this means to urge you to attend the Convention and to take part in its proceedings, and to ask you to extend an invitation to practising architects of your acquaintance, not members of the Institute, to attend its meetings.

As the edition of the Constitution and By-laws is exhausted, you

are requested to bring your own copy with you.

It is also hoped that you have given careful attention to the proposed amendments to the By-laws and will come prepared to support them, to suggest amendments to them, or to oppose them, as you

may think best.

Committee of Arrangements: E. H. Kendall, from the American

New York Chapter; Chas. F. Mc-Kim and Alfred Stone, from the American Institute of Architects and Thomas Hastings and A. J. Bloor, from the New York Chapter. ALFRED STONE, Secretary.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

THE HOTEL JEFFERSON, RICHMOND, VA. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

DETAILS OF THE SAME: TWO SHEETS.

OTHER DETAILS OF THE SAME: TWO SHEETS. [Issued with the International and Imperial Editions only.]

DESIGN FOR A COUNTRY HOTEL, BY A WOMAN. [Issued with the International and Imperial Editions only.]

Several years ago a person came to us with a rough pencil elevation of this building which, he said, had been prepared by his wife who was strongly interested in architecture. He represented to us that he had a largish tract of land in a picturesque neighborhood and was strongly tempted to humor his wife by building on it this summer hotel she had conceived. Would we, at ruling rates, translate into an understandable form his wife's indications, so that he could determine whether the operation would be advisable? Of course we would, and did; but the other party to the contract, after having secured the drawing "to show to his wife," forgot his obligations and never paid us for the work. We do not know whether the hotel was ever built, but feel it not to be unlikely that some time or another we may come upon it in our wanderings. But, if the design has not been appropriated from some already greated wilding. has not been appropriated from some already executed building, the study we now publish is interesting as being ostensibly a woman's work, for, practically, only the clear indications of her intentions were followed in putting the design into perspective.

[Additional Illustrations in the International Edition.]

NORTH CENTRAL PORCH OF THE FINE ARTS BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MR. C. B. ATWOOD, ARCHITECT.

[Gelatine Print.]

A VILLA IN THE ENVIRONS OF PARIS. M. E. LEMAIRE, ARCHI-TECT.

[Copper-plate Etching.]

LONDON AND SOUTHWESTERN BANK, HOLLOWAY, LONDON, ENG. MESSRS. TRUEFITT & WATSON, ARCHITECTS

THESE branch premises, here illustrated from the drawing which appeared at this year's Royal Academy Exhibition, are now in course of erection on a most commanding site at the junction of the Holloway and Parkhurst Roads. White Mansfield stone has been used for the dressings to the main elevations. The ground-floor is devoted to the banking business, and consists of a banking-chamber thirty feet square, with manager's-room, waiting-room, clerks'-room, etc., adjoining. The fittings throughout are in teak. The strongrooms and lavatories occupy the basement, and are fitted with iron grilles and fireproof doors, etc., supplied by the Milner Company. The upper floors of the building are arranged for the manager's residence. The one-story building facing the Parkhurst Road consists of a spacious board-room, with waiting-room, lavatories, storeplace and manager's private entrance.

COTTAGE, BRIMSCOMBE, GLOUCESTERSHIRE, ENG. MR. P. M. HORDER, ARCHITECT.

GIEN LODGE, MIDLOTHIAN, SCOTLAND. MR. J. GRAHAM FAIRLEY, ARCHITECT.



[The editors cannot pay attention to demands of correspondents forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by

AN ARCHITECTURAL EXHIBITION AT THE SOUTH.

ATLANTA, GA., Sept. 19, 1894.

To the Editors of the American Architect:

Dear Sirs, - In view of the Architectural Exhibit to be held under the auspices of the Southern Institute of Architects, at the Cotton States and International Exposition, we desire to extend an invitation to all American architects to participate in the exhibit, and will be glad to have them correspond with us in regard to the matter as early as possible, in order that we might determine as to the amount of space required to accommodate those who wish to exhibit their drawings. We hope to have one of the largest and best display of architecture ever had in America, hence we take pleasure in inviting all architects to join us in this magnificent display, and request that they correspond with us as early as possible. Trusting that you will they correspond with us as early as possible. Trusting that you will make a note of this in your next issue.

All correspondence will be addressed to A. J. Bryan, Correspond-

ing Secretary, fourth floor, the Grand.

SOUTHERN INSTITUTE OF ARCHITECTS. Yours truly,

BEWARE OF UNDERTAKING "CHURCH WORK."

September 12, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

To the Editors of the American Architect:—

Dear Sirs,—I should like to have your opinion of an affair as follows:—A church trustee wrote me regarding alterations of a church, a scheme that seemed to me unpractical; I sent him advice thereon and it was abandoned, as I advised. Another letter followed, introducing new ideas (an added auditorium). To this I replied with a sketch-plan and an exterior view. Then followed two letters from the pastor, in which were comments, "we are all very much pleased," "the trustees have thought well to make these suggestions." Then follows a quantity of detail to be incorporated into plans. Two days later, a second letter with more detail; five days later, a letter from the trustee with more detail, all to be incorporated into the drawings, much involving labored changes in work porated into the drawings, much involving labored changes in work already progressed. Under all this and strictly in accordance with these directions I completed the plans, specifications and details, and sent them on. They took estimates, of which they wrote me, and sent them on. They took estimates, of which they wrote me, then decided not to proceed, but build a new church later, of which the pastor wrote me, "Mr. C. [this trustee] told me last night when we had positively decided upon this, we should have you draw the plans." I naturally now thought it was time, and proper, to ask for a payment on account for what I had done. To my amazement this trustee now wrote, "I do not understand that the church is indebted to you, as your plans have not been adopted or used." Then, apparantly forgatting his part in the giving to me of detail directions had to you, as your plans have not been adopted or used." Then, apparently forgetting his part in the giving to me of detail directions, he adds, "Mr. M., the pastor, has had no authority of the church to incur expense in the way of plans and specifications." I wrote, reminding him of his part in the orders given me, and to it he replies, "I never wrote you I was authorized, and never wrote you officially." He had written me, "As I am one of the trustees of the church," in introducing himself, but claims, "I simply wrote you as an individual member." The result of such correspondence, in extracting my labor and draughtsman's wages out of my office, is apparent, likewise the moral bearing of the affair, but what interests me now is his words of closing: "You, as a business man, must have known that the only party authorized to incur expense, make bargains, or incur obligations upon a church were its authorized board of trustees, and no agreement is binding until signed by them bargains, or near obligations upon a content were its authorized board of trustees, and no agreement is binding until signed by them officially." Is this so? Even when the pastor had written, "the trustees have thought well to make these suggestions," in his orders to me. Is the architect who has his orders thus, from the minister and from one trustee direct, without any legal standing for claim upon the church because he did not get an agreement signed by all the trustees? If it is so, it is a point of great interest to the profes-Yours truly,

[The trustee is right. The church cannot be bound except by a formal vote of the authorized officers of the church corporation. If one of the officers induced a person to do work, representing that it was for the corporation, he might, under certain circumstances, be individually liable for compensation to the person who did the work; but we think that if the one who did the work could, without much difficulty, have ascertained whether his engagement was properly authorized, and failed to do so before performing that service for which he sought compensation, the courts would be likely to leave him to the good-nature or sense of honor of the official who asked him to do the work for his only chance of getting paid for it. Cases of the kind described are not uncommon, and, in many instances, — we do not say in this one, — the architect fails to appreciate justly the position of the other party to the question. No doubt the architect, who knows just how much time he has spent, or how much money he has paid out, to produce the drawings which the church people suppose to be "mere half-hour sketches," has a right to feel himself aggrieved at being refused

payment for them; but, on the other hand, the church people, who are accustomed to make sacrifices of their own time and trouble for their church, without dreaming of being paid, and who forget, or do not know, how much labor and expense the architect has been put to in the course of the affair, have some excuse for being surprised at the presentation of a substantial bill for work which they supposed was being done for nothing. For some reason, church work, which is, pecuniarily, the least satisfactory that comes into architects' offices, is very much run after by a certain part of the profession; and church authorities are usually so besieged by offers to draw plans, or "submit sketches," or do other professional work, for nothing, that they have all the more justification for assuming that if an architect wishes or expects to be paid for work of a sort which other architects are constantly imploring the privilege of doing for nothing, he will give notice of his wishes in this respect before he does the work, or, at least, before he has gone very far with it.—Eds. American Architect.



Boston, Mass. — Annual Summer Loan Exhibition of Paintings; also, New Accessions to the Print Department: at the Museum of Fine Arts,

BRIDGEPORT, CONN. — Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery, September 8 to October 27.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.

CINCINNATI, O. - Special Exhibition of Paintings: at the Art Museum during September.

New York, N. Y.—Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum

of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J.

Alden Weir, Childe Hassam and others: at the Galleries of the

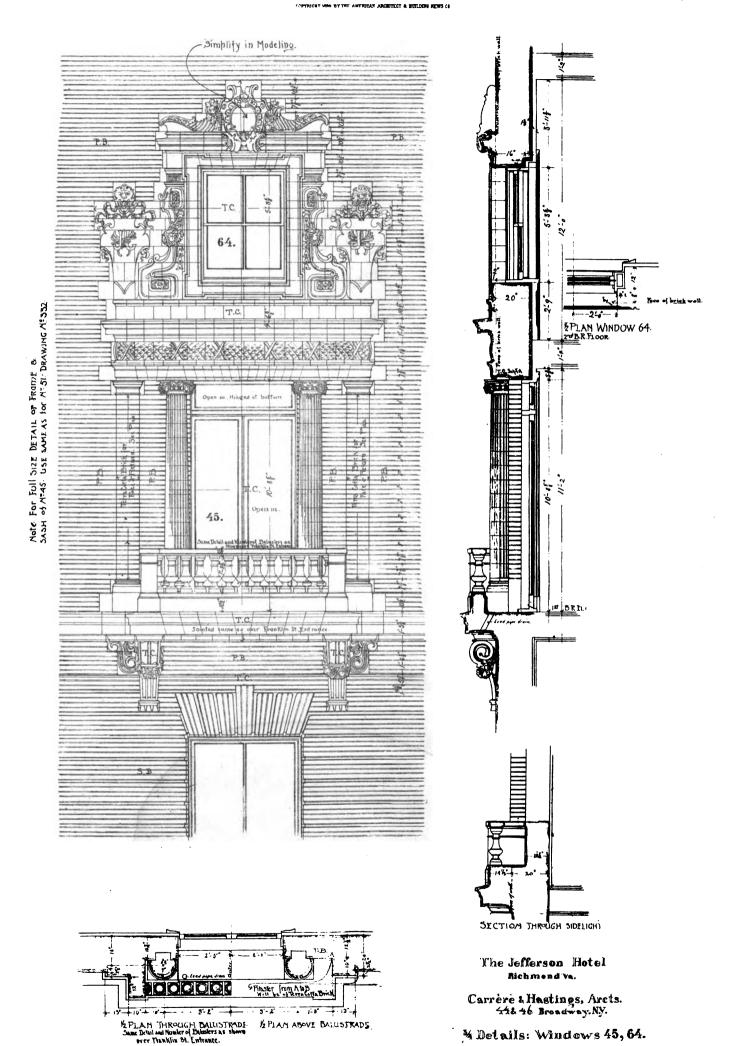
American Fine Arts Society, 215 West 57th Street.

Philadelphia, Pa. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

PROVIDENCE, R. I. - Loan Collection of Paintings: at the Art Club, during September.

The St. Louis Union Station. —The boast of St. Louis, that in the new passenger station recently opened there it has the finest building of the kind in the world, is pardonable, if not literally true, for the main structure is spacious and architecturally imposing, and the equipments are on a most elaborate scale. The total cost, including land, buildings, power-house, train-shed and tracks was \$8,000,000. The passenger station itself is eighty by four hundred and fifty-six feet, and is three stories in height, surmounted by a clock which can be seen from all parts of the city. The material is gray stone. The ground floor is taken up by the carriage entrance, concourse, restaurant, post-office, telegraph-office, barber-shop and wash-rooms, emigrants'-room and ticket-office. The second story contains the general hall, ladies' and gentlemen's waiting-rooms, the dining-hall, kitchen, smoking-room, news and cigar stands, and parcel and check rooms. The third story is occupied by the Terminal Railroad Association's offices. The waiting-rooms are richly decorated and are elegant in their appointments. Especially is this so in the case of the ladies' waiting-room, which has a tiled floor, walls of blue and white and gold, and heavy oak furniture. The train-shed, which covers twelve acres, is built of iron and wood, with a concave glass roof. There is room in it for thirty tracks, besides approaches, platforms, and mail and baggage sheds. Five million pounds of iron and four million feet of lumber were used in its construction. Beyond the train-shed are three express-houses and a milk-platform 350 feet long. The houses are 50 x 250 feet, and provided with spurs of track on one side, and a pavement for teams on the other. But of all the features of the new station, the arrangements for handling traffic are the most interesting. The thirty tracks are joined by a system of switches to the four main tracks within the passenger station. The power to work the switches and signals is furnished by compressed air which conserve THE ST. LOUIS UNION STATION. - The boast of St. Louis, that in the

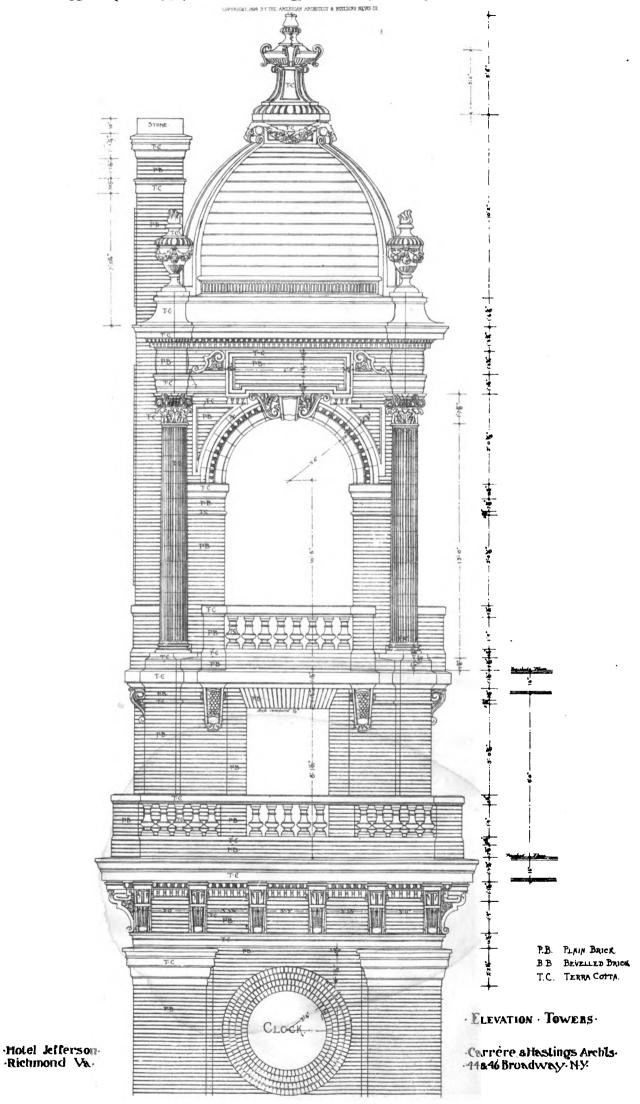
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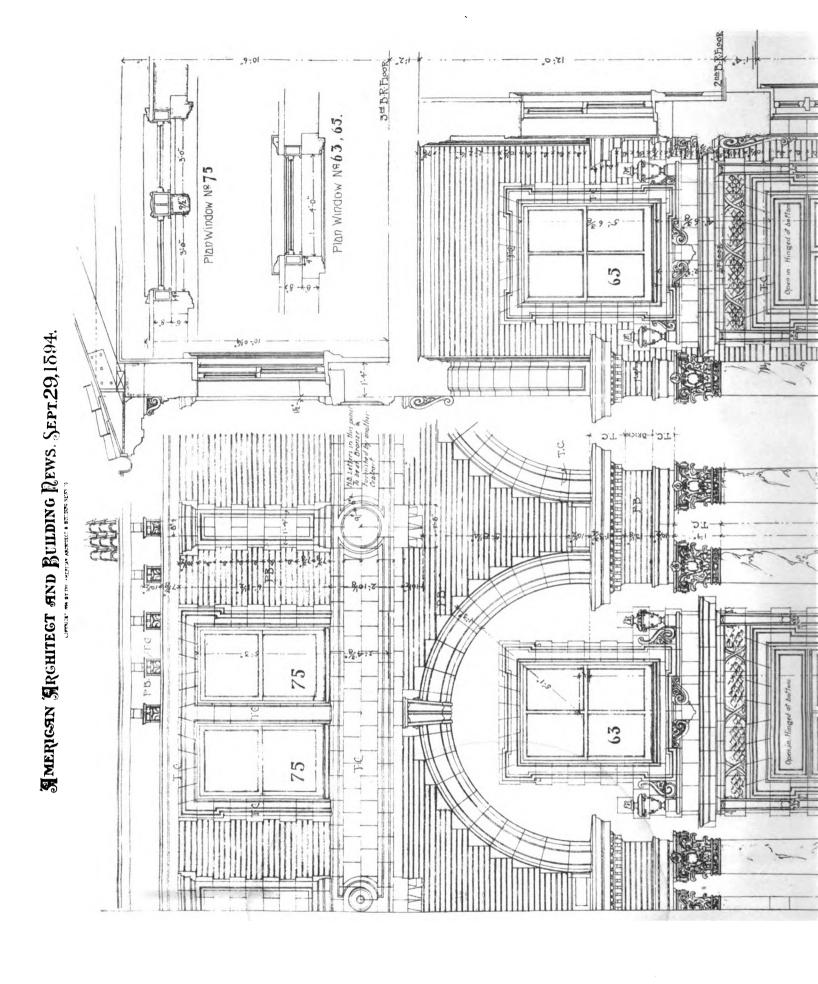


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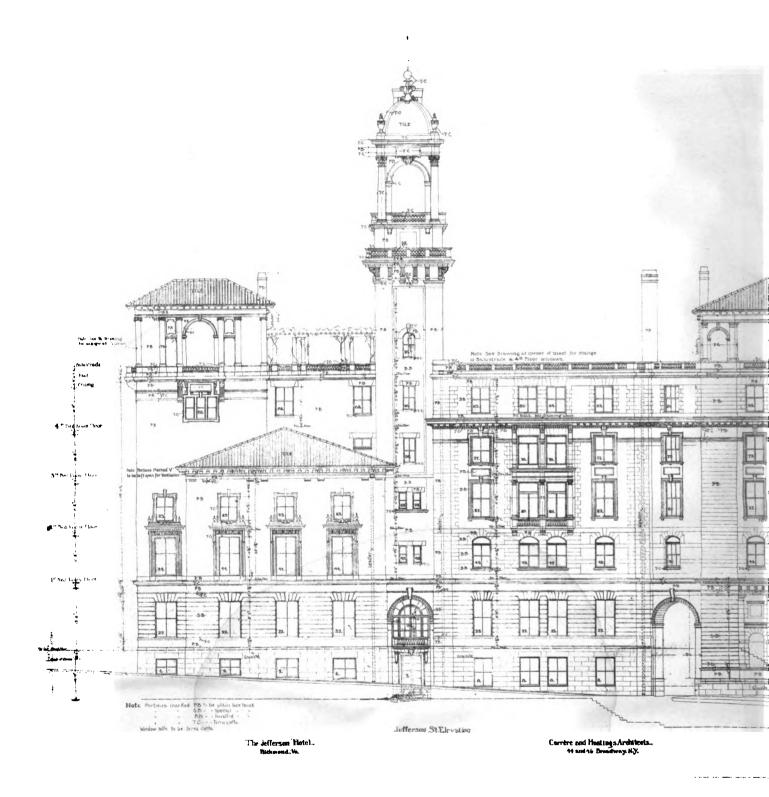
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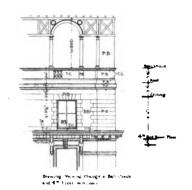
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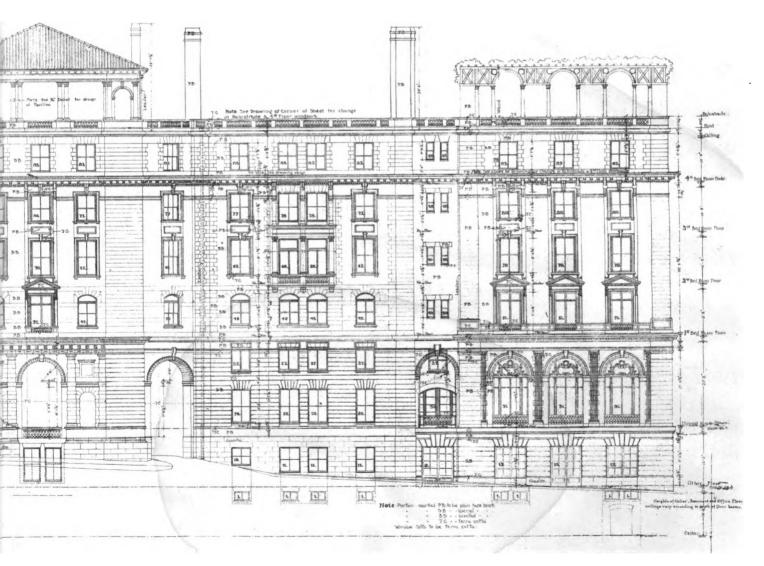
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London, Eng. —

Alliance Assurance Offices. R. Nor-

LONDON, ENG. : -

LONDON, ENG.:—
Alliance Assurance Offices. R. Norman Shaw, Architect, 991 (Int.)
Bishopsgate Institute. C. H. Townsend, Architect, 992 (Int.)
Entrance Front, Bishop's Gate Institute. C. H. Townsend, Architect, 992 (Int.)
Entrance Front, Bishop's Gate Institute. C. H. Townsend, Archit., 990 (Int.)
Queen's Hall, Langham Place. T. E. Kuightley, Architect, 987, 990 (Int.)
House at 179 Queen's Gate. W. Emerson, Architect, 984 (Int.)
"180 Queen's Gate. R. Norman Shaw, Architect, 994 (Int.)
Marble Room, House of Val C. Prinsep. Philip Webb, Architect, 989 (Int.)
P. & O. Company's New Offices. T. E. Colleutt, Architect, 986 (Int.)
Tortland Arms Tavern. R. A. Lewcock, Architect, 986 (Int.)
The City Bank. T. E. Colleutt, Architect, 991 (Int.)

Maidenhead, Eng. Memorial to C. W. Cope, R. A. J. W. Simpson, Archt., 990 (Int.)

Marion, Mass. House of David Rice, A. W. Rice, Architect, 980 (Reg.)
Medford, Mass. High School. Hartwell & Richardson, Architects, 985 (Reg.)
Medford, Conn. Taylor Library. J. W. Korthrop, Architect, 982 (Reg.)
Newport, R. I. Doorway and Mantel. Drawn by J. B. Blair, 989 (Reg.)

" Two Colonial Doorways. Drawn by P. G. Gulbranson, 985 (Imp.)
(Reg.)

New YORK, N. Y.:—

Pittsfield, Mass. Berkshire County
Savings Bank. F. R. Allen, Archt., 980 (Reg.)

" Oseph A. Ball, Archt., 981 (Int.)

" N. H. Christ Church. H. M. Congdon, Architect, 984 (Imp.)
" Warner House, 987 (Imp.)

" Warner House, 987 (Imp.)
Ragusa, Austria. Fontana del Corpo di Guardia, 985 (Int.)

Reading, Eng. Brick Vaulting, Grammar School. A. Waterhouse, Archt., 989 (Int.) well & Kichardson, Aromicous, (Reg.)
Milford, Conn. Taylor Library. J. W.
Northrop, Architect, 982 (Reg.)
Newport, R. I. Doorway and Mantel.
Drawn by J. B.
Blair, 989 (Reg.)
Two Colonial Doorways. Drawn by P.
G. Gulbranson, 985 (Reg.) NEW YORK, N. Y .: -

Bank for Savings. C. L. W. Eidlitz, Architect, 984 (Int.) Colonial Club-house. Henry F. Kil-burn, Architect, 992 (Reg., Imp. and burn, Architect, 572 (neg., 1mp. and Int.)
Columbus Monument. Gaetano Russo, Sculptor, 988 (Int.)
Decoration in Morosini Mausoleum, Woodlawn Cemetery. Jardine, Kent & Jardine, Architects, 988 (Reg.)
Entrance Front of Herald Building. McKim, Mead & White, Architects, 901 (Imn.)

991 (/mp.) Main Staircase, Metropolitan Life In-

991 (Imp.)
Main Staircase, Metropolitan Life Insurance Company Building. N. Le
Brun & Sons, Architects, 991 (Int.)
National Academy of Design. P. B.
Wight, Architect, 987 (Int.)
71st Regiment Armory. J. R.
Thomas, Architect, 990 (Iteg.)
Shop-front on East 17th Street. Van
Campen Taylor, Archit., 988 (Int.)
Staircase, Criminal Courts Building.
Thom, Wilson & Schaarschmidt,
Architects, 983 (Imp. and Int.)
St. John's Church. Varick Street.
Drawn by F. R. Hirsh, 992 (Iteg.)
Niagara Falls, N. Y. House of Dr. G.
C. Clarke. Block, Barnes & Orchard,
Architects, 986 (Iteg.)
Norfolk, Va. Epworth M. E. Church
South. Carpenter & Peebles, Archts.,
989 (Iteg.)
Osnabrück, Ger. Old Houses, 985 (Int.)
PARIS, FRANCE:—

PARIS, FRANCE : on the Rue Hamelin. L. Gui-not, Architect, 984 (Int.)
" "Monte hanin. E. Esnault-Pelterie, House on the Rue Hamelin.

Esnault-Pelterie, Archt., 980 (Int.)
Horses of Apollo, Relief on Hôtel de Rohan. Robert Le Lorrain, Sculp-tor, 991 (Int.)
Shop-front Marquise. F. Jourdain, Architect, 985 (Int.)
BILADELPHIA D.

PHILADELPHIA, PA:

PHILADELPHIA, PA:—
Bethlehem Presbyterian Church. T.
P. Chandler, Jr., Architect, 985
(Int.)
Church of St. Martin in the Fields.
G. W. & W. D. Hewitt, Architects, 290 (Imp.)
Doorway, Arnold's Mansion. Drawn
by F. A. Hays, 983 (Itey.)
House of Daniel Baugh. Hazelhurst
& Huckel, Architects, 988 (Imp.)
Keneseth Israel Synagogue. Hickman & Frotscher, Architects, 984
(Int.)

man & Fotsener, Archibects, 981 (Int.)
Portion of House of Dr. Harte. Cope & Stewardson, Architects, 986 (Imp.)
Pittsburgh, Pa. House of Daniel Brady.
Bartberger & East, Archts., 992 (Reg.)

989 (Int.)
Rochester, N. Y. House of Fred'k
Will. Block & Barnes, Architects,
982 (Reg.)
Salford. Eng. School-board Offices.
Woodhouse & Willoughby, Archts.,
985 (Int.)
San Autonio, Tex. Bexar County Courthouse. J. Riley

San Autonio, Tex. Bexar County Courthouse. J. Riley
Gordon, Archt., 982 (Imp.)

" " House. J. Riley
Gordon, Archt., 982 (Imp.)

" " Gordon, Archt., 982 (Imp.)

" " Gordon, Archt., 986 (Reg.)

San Francisco, Cal. S we den borgian
Chapel and House.
A. Page Brown.
Archt., 986 (Reg.)

Trinity Church. A.
Page Brown, Archt., 986 (Reg.)

San Remo, Italy. Old Gateway, 980
(Int.)

Saragossa, Spain. Doorway, Santa Engracia, 99 (Int.)
Schwalenberg, Ger. Rathhaus, 981
(Int.)

Schwalenberg, Ger. Rathhaus, 981 (Int.)
Somerville, Mass. Proposed Unitarian Church. Cram, Wentworth & Goodhue, Architects, 980 (Reg.)
South Braintree, Mass. Thayer Academy, Laboratory and Gymnasium. Hartwell & Richardson, Architects, 986 (Reg.)
Springfield, Mass. Alexander House. Drawn by G. C. Gardner, 98 (Reg.)
Stockholm, Sweden. Apartment-house. Ludvig Peterson, Architect, 985 (Int.)
Veithurus, Austria. Door in the Fürstenzimmer, 990 (Int.)

Luvyg receisor, Alemeet, Active, Velthurus, Austria. Door in the Fürstenzimmer, 1930 (Int.)
Versailles, France. Apollo and Nymphs, in the Park, 991 (Inc.)
Virofiay, France. Monument to Maze, H. Guillaume, Architect, 990 (Int.)
Walton-le-Dale, Eng. Competitive Design for St. Aidan's Church. Eden & Williams, Architects, 990 (Int.)
Washington, D. C. Main Entrance to Power-station. W. C. Root, Archt., 986 (Inca.)

Power-station. W. C. Root, Archt., 986 (Reg.)
Wells, Eng. Houses and Chapel, Viear's Close. Drawn by A. B. Bibb, 987 (Reg.)
Wokingham, Eng. Corner Building. Chas. Smith & Son, Architects, 781 (Int.)
Woburn, Mass. Competitive Design for Primary School. A. H. Gould. Architect, 990 (Reg.)
Wood's Holl, Mass. Staircase Hall, House of Edgar Harding, H. M. Stephenson, Architect, 935 (Int.)
Worcester, Eng. Victoria Institute. Simpson & Allen, Archts., 985 (Int.)
Wyckoff, N. J. Stable. E. G. W. Dietrich, Architect, 985 (Reg.)
Yonkers, N. Y. House. Parish & Schroeder, Architects, 985 (Reg.)

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XLVI.

Communication: — Our Workingmen.

NOTES AND CLIPPINGS.

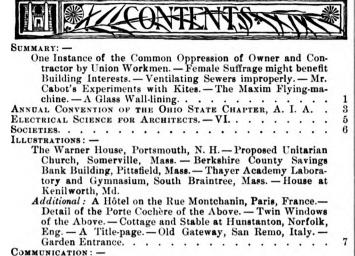
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No. 980.

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OCTOBER 6, 1894.



HE New York Evening Post gives an account of the antics of the walking-delegates over a single building in New York, which will lead a good many people to agree with the relator of the tale in the opinion that the struggle, not only between the "scab" and the walking-delegate, but between the walking-delegate and his union constituents, is becoming one for self-preservation. Last March, a builder, named Lowen, began to erect a block of stores and apartments on his own land on Eighty-fifth Street. According to Mr. Lowen's account, which quite agrees with the usual history of such cases, he was allowed to carry on his undertaking in peace until the buildings were nearly completed, and the mischief-makers could avarging their arts upon him with the greatest makers could exercise their arts upon him with the greatest effect. About three weeks ago, his contractor for the plastering, who had union men at work, at union wages, was applied to for work by two or three union men, who represented that they were in great want, and begged of him the privilege of employment at three dollars and a half a day, or fifty cents less than the union wages. The plasterer had men enough to complete the work, but, out of pity for the unfortunates, he acceded to their entreaties, and allowed them to come to work in the buildings at their own price. At the end of the week, these interesting unfortunates had changed their minds, and when their employer appeared with his pocket-book to pay off his men, they demanded four dollars a day for what work they had done. The contractor was rather startled by this impudent treachery, but paid the men what they demanded, and told them that he had no further need of their services. One would think that this might well have been the end of the affair; but he who thinks that he is ingenious enough to complete a building in New York without giving the walkingdelegates a chance to interfere, reckons without his host. A day or two later a delegate appeared on the spot, and ordered all the plasterers in the buildings to drop their tools and quit work. Not a word of explanation was given to the contractor, nor was he invited to make any explanation for himself. After the men had remained idle for about ten days, the master plasterer was summoned before the board of walkingdelegates. His explanation was listened to, and pronounced unsatisfactory, and all union men were warned not to work for him on the buildings. He then abandoned his contract, and Mr. Lowen undertook to complete the plastering himself. He hired some union men, at union wages, and imagined that he would be allowed to finish the plastering in peace. He was mistaken. The walking-delegate refused to allow the men to go to work unless Mr. Lowen would agree to a new condition, - that the foreman of the plasterers should be appointed by the union. Not knowing what this meant, he consented, and, until the plastering was finished, Paradise, according to the union workman's view, reigned in his buildings. Every man did what he liked, the main thing required of him being, apparently, that he should do as little plastering as possible.

As Mr. Lowen says, they did not earn a dollar a day; but he was helpless, and could do nothing but submit. At last, the plastering came to an end, and the carpenters came in to finish the buildings. The contractor for the carpenter-work had incurred the ill-will of the walking-delegates in some way, and his men had no sooner begun to work in the buildings than they were ordered out. They obeyed, very reluctantly, as they needed employment, but the delegate refused to allow them to come back on any terms. The carpenter, after a vain attempt to arrange the matter, abandoned his contract, and Mr. Lowen, as before with the plasterers, undertook to finish the work himself. He hired union carpenters, at union wages, but, remembering his experience with the foreman plasterer whom the delegates had imposed upon him, requested to be allowed to employ as foreman a man whom he knew to be faithful. This man was not a member of the union, but Mr. Lowen promised that he should join it. The delegates refused this proposition. Two weeks later, they changed their minds, and sent Mr. Lowen word that they would accede to it; but, meanwhile, his former contractor for the carpenter-work had collected a force of men, partly union, and partly non-union, and was at work with them, acting himself as fore-man. When the delegates discovered what was going on, they peremptorily called out the union men who were at work, but the poor creatures, in desperation, refused to go, preferring to expose themselves even to the fearful punishments that the walking-delegates can inflict for disobedience, rather than give up the work which was to bring to them and their families the support that they so much needed. With slight variations, the same performances, Mr. Lowen said, had been gone through with every trade concerned in his buildings, except the masons, and, although he had paid union wages, and done his best to please the union tyrants, he was out of pocket four or five thousand dollars, by loss of rent during the time that his operations had been wantonly interrupted. The reason why the masons had kept at work was, he said, that the constitution of their union forbids "sympathetic" strikes, and the walking-delegates, who live chiefly by "sympathy," or, in other words, conspiracy, in their operations, had been unable to get the grip upon them that they needed.

PEAKING of the crimes which the walking-delegates in New York perpetrate against the poor workingmen, we wonder that it has never occurred to any one to bring up the matter to assist in the arguments on the question of woman suffrage, which was recently so warmly debated in that State. There can be no doubt that the extension of the suffrage to women would have a great influence over labor matters, and, we are inclined to think, a good one. However enthusiastic a partisan a woman may be, she never loses sight of the breadand-butter supply; and a system of organization of labor under which the family living of the workingman is made dependent upon the caprice of a walking-delegate is not likely to find much favor with the sex which has the commissariat more particularly in charge; while the persecutions under which men suffer in silence would be avenged at the polls if the female relations of "scabs" could have a chance to express themselves in that way.

■ DISCUSSION is going on in the English papers as to 1 the advantages and disadvantages of ventilating sewers directly into the street, by perforated manhole covers; and, as our city sewer departments appear to be just now possessed with a mania for this kind of ventilation, it is worth while to call attention to some of the English views of the matter. It is rather curious that, on the whole, the practical men, such as health officers and city engineers, seem to be opposed to indiscriminate ventilation of sewers into the streets, or propose to modify the system in some way, while the theorists and writers advocate its utmost extension, in its most unmitigated form. There is no doubt that plenty of fresh air will destroy the microbes that are carried through sewage; but the question is whether the danger that some may escape alive from the sewer manholes, and do harm, where these are situated in close proximity to houses, does not counterbalance the advantage of free aëration. We have ourselves known of one or more cases of diphtheria, in Boston, which could be traced to no more probable cause than the superabundance of ventilation allotted to the sewers in the neighborhood; and the medical health-officer of the town of Fulham, in England, reports that out of two hundred and thirty-one cases of diphtheria occurring in his district within a given period, ninety-six, or about forty-two per cent, were in houses situated within ten yards of a sewer-ventilator. With a reasonable allowance for additional cases, in which the patients were infected by inhaling the air from sewer-ventilators situated at a distance from their dwellings, a very strong case is made out against the exposure of the contents of sewers to the air of crowded streets during a diphtheria epidemic. One English city-engineer, impressed with these considerations, writes that he has fitted filters of cotton wool to all the sewer-ventilators within his jurisdiction; and, simple as it is, this precaution is an excellent one. With ventilated sewers, Dr. Rauch's successful plan for checking a diphtheria and scarlet fever epidemic, by burning sulphur in the sewers, could not be carried out; but his idea was an excellent one, and it is possible that something of the same kind might be done by flushing the sewers in the seaboard cities by electrolyzed seawater, which certainly has a powerful effect in destroying the germs of disease.

R. SAMUEL CABOT, whose name is a household word among architects, has been turning the scientific ingenuity which has already endowed the building world with so many new and excellent materials to a different subject; and, on a small scale, is studying aëronautics from a point as yet hardly occupied. Following a suggestion in Mr. Chanute's book on flying-machines, he has constructed some large kites, some of them measuring more than a hundred square feet in area, and has been able to make these kites go through nearly all the motions of birds. For example, as he says, he can make one hover directly over his head, with a string which is almost wholly relaxed; he can make them advance short distances apparently against the wind, and can make them swoop gently down to the ground. For some of these movements, he is obliged, as, in his opinion, the birds are also obliged, to take advantage of upward currents of air, which are generally to be found on hill-sides, and over warm, sunny valleys; but it is hardly necessary to say that this very study of the effect of upward and downward air-currents is to be, later, as important to aëronautics as the study of the currents and tides in the ocean is to ordinary navigation. Mr. Cabot makes one observation which should be remembered - that a large kite is much more manageable than a small one. If the proportion should hold good for great increases in dimensions, the problem of floating and sailing in the air will be easier than had been supposed.

R. CABOT does not believe that any apparatus can be propelled for a long distance against the wind, without motive force of some sort, but he thinks that the force required is far less than has been supposed. How this force shall be applied is, undoubtedly, the next question to be considered. To make a machine which will float in the circular to the circular simply by displacement involves, as he justly says, inflation with gas, with the effect of increasing its bulk and surface so much as to render it almost helpless in a high wind. It may be remarked that, as displacement increases, generally, as the cube of the diameter, while surface increases only as the square, increase in the ascensive power of gas-inflated bodies would still more rapidly increase the manageability; but he expresses his conviction, which we fully share, that, in the flying-machines of the future, gas, if used at all, will be carried, compressed in steel cylinders, for giving temporary buoyancy in cases of emergency, the machine, at other times, being arranged to expose as small a surface to the wind as is compatible with the necessary lightness. How Mr. Cabot would propel his soaringmachine or lift it into the air, if upward currents should fail, he does not say, but we may hope for suggestions on this matter later. As our readers know, our own idea is that the soaring-machines of the future will be lifted to a certain height, by means, probably, of floats temporarily inflated with hydrogen, and the hydrogen then set free, leaving the ship to sail downward, by gravitation, at a very small angle with the horizon, so that, for every foot that it approaches the earth, it will traverse horizontally a space of perhaps a mile. There are no tables that we know of which indicate the speed which would be attained by a body of given weight sliding through

the air at such an angle with the horizon; but tables are given for the flow of water under somewhat similar circumstances, which indicate that immense speed could be obtained, at angles which would carry such a soaring-machine at least half-way across the Atlantic in a single flight from an altitude of one or two miles. It seems probable that the velocity reached in this way, after the craft was once fairly started, would be so greatly superior to that of any known wind that air-currents would hardly need to be considered; and it is certainly within the range of possibility that spare charges of hydrogen might be taken, sufficient to lift the craft in mid-ocean for a new start, if necessary.

F course, this is all theory, but, as it seems to us, it is a theory with a more liberal margin for contingencies than any system of air-navigation yet attempted. As is well known, Mr. Maxim, with an engine and boilers of enormous power, although nearly as light as if made of egg-shells, is able to lift a huge winged machine, for a few seconds, a few inches above the ground. Such an apparatus as this, in our humble opinion, has no future. No sane man would trust himself on a voyage in a vessel propelled by engines of such fairy delicacy as Mr. Maxim finds indispensable to rising from the ground at all; and there can be little hope of lightening them materially, in proportion to the whole, by increasing the scale. fundamental mistake lies in taking along the lifting machinery, including fuel and water, in the craft, which it necessarily and hopelessly overloads. There is a certain apparent advantage in carrying one's coal and water and engines and boilers along, as a source of power to be used on occasion, but it is only an apparent one. By the same reasoning, it would be advantageous for a man about to take a journey to load himself up with legs of mutton and bags of flour, with which to support life on his tour. We know, by experience, that a man will make his journey far more quickly and easily by making a hearty meal of chops and muffins before he starts, and taking with him a few coins with which to buy another meal if he wants it. So in sailing through the air. Instead of carrying along several tons of fuel and machinery, which has to labor to its utmost capacity to keep itself afloat in its destined medium, to say nothing of the passengers which it is expected to transport, it would be obviously a great advantage to have all the lifting, which is the hardest part of the work, done at once, by means outside of the equipment of the vessel, leaving to the latter only the infinitely easier task of guiding itself horizontally, or nearly so, to its destination. Such a means is readily available in compressed hydrogen, with which the power developed by many tons of coal, acting through many tons more of metal in the shape of boilers and engines, can be applied to doing all the hard work of the voyage before the start, while a further supply, for contingencies, can be easily carried along. Although the idea of coasting down the atmosphere, instead of being forced through it by a lumbering, laboring steamengine, is, at first, rather startling, any one can see it put in practice every day by birds of all kinds, and we believe that it will be found by far the safest, as well as the cheapest and simplest system of aërial navigation. It is hardly necessary to say that we have no leisure for investigating the subject, but if Mr. Cabot, or anybody else who would like to try an inexpensive experiment, which has never been tried before, will make a winged frame, like a bird, attach to it a weight, so to keep what answers to its spinal column at a tolerably fixed, and very small, angle with the horizon, and send it up into the clouds by means of a balloon, attached to it by a string wound around a lighted slow-match, or in some other way arranged to detach itself after a given time, he will, probably, if he can keep trace of the flying object, be able to make an important contribution to our knowledge of the atmosphere, and of the ways to navigate it successfully.

CERTAIN firm in Berlin has introduced a new wall-lining, in the shape of sheets of glass, about three-eighths of an inch thick, which are attached to the wall with cement. The glass, which is opaque, and has the color of ivory, is ornamented with relief decoration; and the back is provided with furrows and cavities, which serve to hold the cement, and attach the glass firmly to the wall. This sort of lining, if well done, might, we should say, meet with extended employment in hospital wards, bath-rooms and similar places.

ANNUAL CONVENTION OF THE OHIO STATE CHAPTER, A. I. A.

HE Annual Convention of the Ohio State Chapter of the American Institute of Architects met at the Beebe House, Put in Bay,

August 16 and 17, last.

The Convention was called to order at 3 p. m. President J. W. McLaughlin in the chair; Geo. W. Kramer, Secretary.

On calling the Convention to order the President delivered the

following address:

FELLOWS OF THE OHIO CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS:-

It has now been two years since our Seventh Annual Convention was held in the City of Columbus.

Last year it was deemed inexpedient to hold our usual meeting, owing to the fact that the Annual Convention of the American Institute of Architects took place in the summer season instead of in the fall, and the extraordinary attractions presented by the wonderful Columbian Exposition, it was thought, would, of course, distract

attention from other matters.

Although the World's Fair has passed into history, I cannot refrain from a passing notice of this event and a hope that the great

retrain from a passing notice of this event and a hope that the great object-lesson presented at Chicago last year has not been lost to us.

We, as architects, can take pride in the exhibition our nation made to the world, showing what we could do in the way of superb architectural effects, and no one who visited the great White City by the shores of Lake Michigan can ever forget the impressions made upon him, whether it was while the sun was gilding the gorgeous domes and towers, or at night when electricity, that marvellous agent of man, was bathing the structure in molten silver, making the scene a veritable dream-land.

This was undoubtedly the most important event that has taken

This was undoubtedly the most important event that has taken

place since our last meeting.

As our last convention was the seventh annual meeting, I do not know whether to call this the ninth, or our first biennial assemblage; however, whatever we shall determine to call it, it is our privilege to be here, surrounded by the beautiful Lake Erie, to discuss questions which, it is to be hoped, will be of benefit, not only to ourselves, but the entire profession. but the entire profession.

It is hardly necessary to remind you of what you all are perfectly aware: that we have passed through a year of great financial depression, and our own profession has been one of the first to feel its effects.

Architects, unlike artists of the palette and brush, cannot calmly sit down and draw pretty pictures and sell them to whoever wishes to purchase: we have to wait for clients to order them to fit a certain lot or site; and in the present state of the country, capital is of a very retiring disposition and not easily moved or cajoled into

of a very retiring disposition and not easily moved or cajoied into doing anything for our especial benefit.

Now that Congress has at last stopped the seemingly interminable discussion of the Tariff question, we can hope that they will take just a little time to pass a Bill that is before them, that would be of lasting benefit to our profession, much more than anything that has been done before. But unless we make a determined effort upon our Representatives and Senators, I fear that the McKaig Bill will be consigned to obscurity and the designs for our Public Buildings will still be made, as heretofore, in the Governmental "plan factory" is Weshington. in Washington.

It would be a great misfortune to the architectural profession if

this bill to allow competition among architects for the Government buildings should fail to pass at the present session of Congress.

Although many of us may have our own ideas of the results of competition, yet we all must admit that anything would be better than the system of Government architecture that has prevailed for the last thirty years or more, as nothing could possibly be worse than our present Public Buildings, which are a laughing-stock to all intelligent visitors from foreign countries.

In conclusion: upon retiring from the office of President, having

served the allotted time, I desire to thank the Association for the honors conferred upon me, not the least of which was, being selected by your Committee to design the Ohio State Building at the Columbian Exposition.

The minutes of the last convention were then read by the Secretary, (omitting papers and addresses, the same having been published and distributed among the members immediately after the convention) and approved.

On calling for reports of Committees, further time was granted to prepare same. Reports of officers were also deferred.

On a call for other business, the following letter from Mr. Stone, Secretery of the American Institute of Architects, relative to certain contemplated amendments to the By-laws of the American Institute of Architects, was read, the same being referred to the Convention for an expression of opinion as relating to the status of State

PROVIDENCE, R. I., August 11, 1894.

MR. GEORGE W. KRAMER.

Secretary of the Ohio Chapter of the American Institute of Archi-

Dear Sir, - Enclosed please find copy of Constitution and Bylaws with amendments marked upon the same so far as they can be;

and in addition thereto it is proposed to retain the present Article 10 and call it Section 1, and insert new sections as follows:

SECTION 2. A practising architect whose professional office is at a greater distance than twenty-five miles from the headquarters of any Chapter may apply, in the manner heretofore prescribed, and become a member of the Institute without first becoming a member of any Chapter and being approved by the officers of the same; but he shall become a member of a Chapter whenever one shall become available within said limit. within said limit.

Sec. 3. Every Chapter, and all Chapters uniformly, shall provide for a membership for practising architects, for which the initiation fee shall be \$10 and the annual dues \$5, but each Chapter shall have the right and power to limit the privileges for such membership and to make other classes or extensions of membership with greater or lesser dues as it may deem best, this uniform rate being intended to apply only to the membership made compulsory for admission to the Institute.

SEC. 4. Every practising member of a Chapter of the Institute shall become a Fellow of the Institute and no election of new practising members shall take effect until the Institute shall also have elected the candidate to Fellowship.

Sec. 5. The termination of any person's practising membership in a Chapter, shall also terminate his membership in the Institute and therefore the action of the Chapter in regard to such termination shall not take effect until the Institute has concurred and the termination of any person's membership in the Institute shall terminate his membership in any and every Chapter of the Institute.

SEC 6. The territorial limits of every Chapter shall be defined and decided as follows: A project shall be submitted by the Chapter to the Institute and shall be approved or amended by the Institute, so as to prevent any overlapping of territories and so as to secure, as far as possible, a practical distribution of Chapters; such amended project shall become the limit and definition of the territory of such Chapter, and shall be recorded by the Institute Secretary upon its Charter.

SEC. 7. New Chapters: Any ten practising architects eligible to membership in the Institute may apply to the Institute for membership and for a charter to organize a new Chapter, stating its proposed limits, and the Institute may elect such new members and charter such new Chapter, provided that its headquarters shall not be within fifty miles of the headquarters of any existing Chapter, without the consent of such existing Chapter, and provided, further, that if the new Chapter proposes to take part of the territory of any existing Chapter, such existing Chapter shall be consulted by the Institute before such charter shall be granted. shall be granted.

Sec. 8. Delegations: A Chapter may send to any convention of the Institute one or more Fellows properly accredited by vote of a meeting of said Chapter as its delegates upon such questions as shall be defined in the credentials—and on motions upon such questions the delegation may vote (in addition to each delegate's personal vote) one vote for each absent Fellow of the Chapter who shall be recorded in the credentials as having at the accrediting Chapter-meeting voted to so authorize the delegation; but no additional privileges of debate nor any vote in elections shall be exercised by a delegation, as such, it being understood that each delegate retains unimpaired all his personal privileges.

SEC. 9. State Associations: When there are two or more Chapters in any State, they shall, for any purpose (other than local and pertaining to their territory and jurisdiction) involving an appeal to, or business with, the Legislature, Judiciary or Executive of said State, unite for said purpose, as occasion may require, under the name of the [here insert name of State] State Association of the American Institute of

These are the amendments proposed by the Committee and are to be considered at the meeting of the Executive Committee to be held in New York on Monday next.

Yours very truly, (Signed) Alfred Stone,

(Signed) ALFRED STONE,

After reading same, the following discussion occurred:

Mr. Fallis: In view of those amendments it is impossible for this

Chapter to take any action at all for the future. If they are adopted, the Chapter will have no existence.

President McLaughlin: These amendments have been suggested, but have not been acted upon. They are to be acted upon by the Executive Committee at its next meeting in New York. They can be published and then will be in the hands of the Institute to be adopted or rejected at the convention in Catalon. adopted or rejected at the convention in October.

Mr. Fallis: We might express our opinion of their approval.
Mr. Kramer: President McLaughlin is a member of the special

Mr. Kramer: President McLaughlin is a member of the special committee who may have this in charge.

Mr. Yost: Mr. President, I would like to ask your judgment about a question that arises in my mind. Under the rules of the Institute, thirty days' notice of proposed amendments is required. Now, suppose at the meeting of the Institute, in October, some member proposes to amend the proposed amendment; will it be impossible to act upon the amendment to the amendment at the Institute meeting?

President McLaughlin: I think it was a proposed.

President McLaughlin: I think it would not interfere in the least. Mr. Kramer: Mr. President, are you not mistaken as to that?

President McLaughlin: The Committee has formulated these amendments to report at the meeting of the Executive Committee, which will be held at least sixty days before the Convention. The Executive Committee may reject the whole matter.



Mr. Yost: Suppose the thirty days' notice is given and the matter is brought up for action at the convention; will it be possible to make amendments to the proposed amendment at that time?

President McLaughlin: It can either be adopted, rejected or

amended.

Mr. Kramer: Let me read the By-law of the Institute, on the subject of amendments. It is as follows:

ARTICLE XI.

These By-laws may be amended at any meeting of the Institute by a two thirds vote of the members present and voting, provided notice of any proposed amendment shall have been sent by the Secretary to each Fellow at least thirty days before the amendment is to be voted upon.

Mr. Yost: That seems to cut off any discussion anywhere.

President McLaughlin: From that, I should think it would have

to stand as presented in the notice, thirty days prior to the convention. Mr. Kramer: It would hardly seem just that the Executive Committee should be the final power in formulating any amendments, as we would only have the power of either favoring or rejecting them as presented.

President McLaughlin: We can propose to have that rule

amended at any regular meeting.

Mr. Fallis: It seems to me it is all right the way it is, because it

is a definite proposition; we can vote yes or no.

It brings us to this point: if we think an amendment Mr. Yost : should be offered, it should be done in time for the thirty days'

notice.

Mr. Kramer: I understand the reason this was sent was, that Mr. Stone knew that our meeting was prior to the Executive Committee meeting and he wished us to express our opinion of the proposed amendments. I can see no reason to prevent, if any one desires to offer an amendment to them; but unless adopted by the Executive Committee as a part of them, it would be necessary to have the thirty days' notice, published and distributed the same as the others. It is not a matter in my opinion that proposed as the others. It is not a matter, in my opinion, that proposed amendments need originate with or emanate from the officers of the Institute.

Mr. Fallis: Instead of making an amendment to these amend-

ments, why not make a separate amendment?

President McLaughlin: We can have our Secretary send out notice that this Chapter will offer such and such amendments at the convention in October. Under the amendments as here proposed the State Chapter will be destroyed.

Mr. Bolles: Yes, if these amendments are adopted, that ends this

Chapter.

Mr. Kramer: The present system of State organization is all right in theory, but miserable in practice.

Mr. Bolles: Can we not get rid of their faults and still keep the

State Chapters?

President McLaughlin: That paper of Mr. Stone's was sent to us to get an expression. Do we desire to express ourselves on any of

those points?

Mr. Fallis: Yes, the State Chapters, in some ways, are much more important than the local Chapters. Our local business tends to draw us away from each other by reason of frequent contest and disappointments, and we cannot meet in the local Chapter on the same terms we meet here, where we have no personal matters to interfere with our enjoyment and the pleasant greeting for each other. These State meetings tend to get us better acquainted with each other and to heal up sores and personal differences, and I would like very much to see the State organization kept up.

Mr. Drach: Do we want to keep up the present State organization

as it is?

The following motion was then made by Mr. Yost: "That a committee be appointed by the Chair to formulate a reply as an expression of this Convention, which reply shall be presented to and considered by this Convention, and if adopted, to be forwarded to the Executive Committee and Secretary Stone." The motion prevailing, the Chair then appointed Messrs. Yost and Drach as Committee, with instructions to report at the next session of the Convention.

The Secretary then read a communication from Mr. J. M. Carrère, representing a special Committee of the New York Chapter A. I. A., relative to proposed changes in the schedule of charges of the A. I. A., so as to place competitions under the same heading as preliminary drawings. On motion of Mr. Yost, the matter was referred to the President and Secretary to formulate a reply to be presented for consideration at the next session.

The Secretary then read a communication from Secretary Stone,

of the A. I. A., requesting action on the so-called "McKaig Bill."

Mr. Drach moved that the Secretary formulate a request to be presented to the Senators and Representatives of Ohio in Congress, asking them to use their influence in securing the passage of the "McKaig Bill"; the paper to be drawn up in the name of the Ohio Chapter of the A. I. A., and signed by the President and Secretary.

After an affirmative vote on the motion, a discussion followed

relative to dues, etc.

Mr. Yost then read a paper entitled, "The Style Hunters." No other papers being offered, after a vote of thanks to Mr. Yost the Convention adjourned until 10 A. M. the following day.

THE SECOND DAY'S SESSION.

Friday, August 17, 1894, the Convention was called to order by President McLaughlin, on board the yacht "Cora," on Lake Erie. The Committee, to whom was referred the contemplated amend-

ments to By-laws, then made the following report:

COLUMBUS, OHIO, August 18, 1894.

The matter of amendments proposed to be offered for adoption at the next meeting of the Executive Committee, which has been brought to the attention of the Convention of the Ohio Chapter, presents questions of vital interest to the profession; and it is the opinion of this Committee that the enactment of Section 9, as proposed, will not only accomplish the purpose which seems to be sought, to wit: organize the profession of the several States into an effective weapon for its own defence, and to accomplish its best work for the profession, but will destroy the existing State Chapters and

leave nothing in their place that can be of any practical use.

In this Section, as proposed, it is provided that when "occasion may require" the several Chapters shall unite for any purpose other than local, but who is to determine when the "occasion" has arrived, or how is the union of Chapters to be made? On these points of vital importance the proposed Section is silent. Moreover, Section 2 separated and already existing regulations a well pre-Section 2 as proposed, and already-existing regulations as well, provide for members of the Institute outside of the Chapters.

At present under proposed Section 9, more than one-half of the profession in Ohio could be deprived of present Chapter privileges and would have no voice in any State Association. Without extending the discussion, it seems evident to us that if the present State Chapters are to be destroyed, there should be something more

efficient as an organization put in their place.

It is the opinion of this Committee that the time has arrived when better organization is demanded by the best interests of the profession and that any policy which does not require members of the Institute to become members of Chapters is weak and temporizing, and that within reasonable time all should be required to become members of the Chapter, whether they ever have been heretofore or not.

It is the opinion of this Committee that associate membership in Chapters, for beginners in the profession who have not had sufficient experience to entitle them to Fellowship in the Institute, will be valuable as an inducement to the young practitioner to start in with us and finally become a member of the Institute.

It is the opinion of this Committee that in order to arrange for all

members of the Institute becoming members of the Chapter, a less number than ten must be fixed as the minimum number to form a

Chapter.

It is also believed that in the larger cities, where there are a great number of architects, much good can be done by having, when the architects in such cities so desire, two or more Chapters, that each will probably number in its membership some who would not be willing to become members of some other Chapter in the same city.

Hence it is believed by this Committee that such a thorough organization of the profession as the times demand can not be effected under the operation of the amendments as suggested.

The system of delegate representation is approved.

In view of the opinion above expressed, we would suggest that Article 10 be put into the following form, for the consideration of the Executive Committee.

BY-LAWS: ARTICLE X.

SECTION 1. The Institute shall provide for a thorough organization of the profession—so far as practicable—by the formation of new, and the continuance of existing Chapters, and such State organizations—to be known as an Association—as may be found to be practi-

All Chapters shall act under charters issued by the Board of Directors

All Chapters shall act under charters issued by the Board of Directors of the Institute, which charters shall define the limits of the territory and jurisdiction of the several Chapters. Chapters and associations shall make their own by-laws and rules of action — not inconsistent with the constitution and by-laws of the Institute.

The Executive Committee of the Institute shall annually — not later than March 1st — make such subdivision of the territory of each State into Chapter Districts as the interests of the profession therein seem to demand, but no change shall be made in the territory or jurisdiction of any Chapter after being once assigned, without first consulting the wishes of the Chapter interested. wishes of the Chapter interested.

SEC. 2. On and after January 1, 1896, each member of the Institute

SEC. 2. On and after January 1, 1890, each member of the Institute shall, as a requisite to such membership, be a regular member in good standing in a Chapter in whose jurisdiction he resides, but in no case shall the initiation-fee in any Chapter for regular membership be more than ten dollars nor the annual dues more than five dollars.

Persons not now members of Chapters must first be elected members of the Institute before becoming eligible as regular members of Chapters. Upon election as members of the Institute and the payment of Chapter initiation-fee, persons will become regular members of Chapters in whose jurisdiction they reside.

Loss of membership in the Institute constitutes loss of membership in the Chapter.

in the Chapter

Violations of the rules of the Chapters shall be referred to the Executive Committee of the Institute, and shall be, by them, treated as though the offence was against the Institute.

Any person now an Associate Member of any Chapter shall be eligible to retain such membership until January 1, 1896, when such membership will terminate unless such persons shall, in the meantime, become

regular members by election to the Institute, and persons hereafter elected associate members of Chapters must, within two years thereafter, become regular members of the Institute, or forfeit membership in the Chapter.

Each Chapter may provide for such classes of members -

regular and Associate Members — as it may deem proper, and define the privileges and duties of each, not inconsistent herewith.

Any six members of the Institute may form a Chapter, provided the location be approved by the Executive Committee, and provided that there be no other Chapter or less than fifty members in the same Chapter District.

When two or more Chapters are in the same Chapter District, persons desiring to become members may elect which of the Chapters shall

receive their membership.

SEC. 3. When there are two or more Chapters in a State, the Presidents of the several Chapters shall constitute a State Executive Board, who shall organize as early as practicable after January 1, 1896, and annually thereafter, in January, at the Capital of the State at the call of the President of the oldest chartered Chapter in such State. Their organization shall consist of the election of a president, a secretary and a treasurer, and the prescribing of their duties and the adoption of rules and regulations for the government of the Executive Board.

The State Executive Boards shall have general charge of State professional interests, and shall have general charge each year, and shall annually call a joint convention of all the Chapters in the State, to be held at such time and place as the Board shall determine.

The several Chapters shall provide for the payment of the expenses of the Executive Boards and Annual Convention, each Chapter contributing in proportion to its number of members.

Sec. 4. Chapters other than local, now existing, are authorized to retain all present powers and privileges until January 1, 1896, when their charters shall be returned to the Executive Committee of the Institute, when such Chapters shall be legitimately succeeded by, and all their archives and possessions (including funds) transferred to the State Executive Boards, provided for in Sec. 3.

SEC. 5. Delegations. A Chapter may send to any Convention of the Institute one or more Fellows properly accredited by vote of a meeting of said Chapter, as its delegates upon such questions as shall be defined of said Chapter, as its delegates upon such questions as shall be defined in the credentials—and on motions upon such questions the delegation may vote (in addition to each delegate's personal vote) one vote for each absent Fellow of the Chapter who shall be recorded in the credentials as having at the accrediting Chapter-meeting voted to so authorize the delegation; but no additional privileges of debate nor any vote in elections shall be exercised by a delegation, as such, it being understood that each delegate retains unimpaired all his personal privileges.

GUSTAVE DRACH, Committee.

The report was adopted and Secretary was instructed to immediately forward copy of same to Secretary Stone, and the Executive Committee of the A. I. A.

The Secretary then read the report of the Committee on the McKaig Bill, which took the form of a resolution, as follows:

Resolved, That we respectfully request our Senators and Representa-tives to do all in their power to further the passage by the present Congress of the "McKaig Bill," regulating designs, etc., for Government Buildings.

The resolution was passed unanimously, and the President and Secretary were instructed to forward copies to the Senators and Members of the House from Ohio, and also to forward copies to the members of the Chapter for personal use in the same direction.

The Secretary then read a communication from the President of the St. Louis Chapter indicating that the St. Louis Chapter had endorsed the contemplated action as outlined by the New York Chapter relative to a change of schedule as regard competitions. The Committee recommended that the Ohio Chapter take similar

The following resolution was then passed unanimously:

Resolved, That the Ohio Chapter endorse the action taken and the recommendations offered by the New York Chapter relative to changing the schedule of the American Institute of Architects as regard preliminary services and competitions, and as indicated in their communications.

The Convention then proceeded to elect officers for the ensuing year, which resulted (Mr. McLaughlin declining to serve longer as President) as follows:

J. W. Yost, Columbus, President; H. E. Siter, Cincinnati, First Vice-President; S. R. Burns, Dayton, Second Vice-President; Geo. W. Kramer, Akron, Secretary; E. O. Fallis, Toledo, Treasurer; J. W. McLaughlin, Cincinnati, C. F. Schweinfurth, Cleveland, and H. A. Linthwaite, Columbus, Executive Committee.

Place for holding next Convention — Cincinnati.

President McLaughlin then expressed his thanks for the honors

President McLaughlin then expressed his thanks for the honors bestowed upon him for the past three years, and introduced his successor, who expressed his thanks for the honor of being elected

President.

A vote of thanks was then passed for the retiring officers and the stenographer, after which the Convention adjourned.

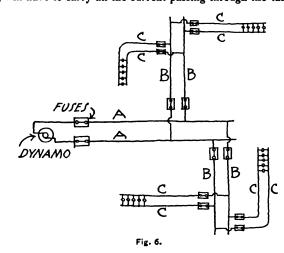
GEO. W. KRAMER, Secretary.

ELECTRICAL SCIENCE FOR ARCHITECTS.1 - VI. METHODS OF WIRING.

HE multiple system may be elaborated by running from the mains, branches, and from the branches, taps, just as in a water or gas system branches or taps are taken from the main pipes. The dynamo is maintaining a pressure between the wires that lead from its terminals, and any taps that are taken from these wires are simply extensions of the mains proportional to the current wires are simply extensions of the mains, proportioned to the current they will have to carry. With a water or gas system, the free space outside, the air, may be considered as one of the pipes, and the devices used in keeping up the pressure on the system are keeping up a pressure between the pipes and the free space.

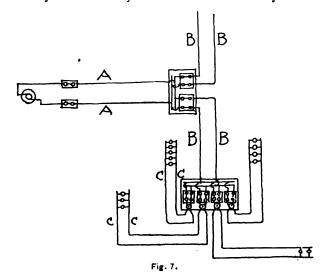
Figure 6 shows an extended multiple electric system. The mains, and the state of the pipes are the pipes and the free space.

AA, will have to carry all the current passing through the lamps, or



if there are twenty lamps each taking \(\frac{1}{2} \) ampère, the mains will have to carry 10 ampères. The branches, \(BB \), carry only the current required by the lamps they feed, or as the system is laid out in the figure, they will carry five ampères each. The taps, \(CC \), will carry 2\(\frac{1}{2} \) ampères each. In this way, the current may be distributed throughout a building, branches being led to various points and the taps taken off as lamps are required.

With what is called the "closet system" the taps are all taken off in a few centrally located places, and in a recess in the wall may be placed all the safety-fuses and the switches, so that the controlling may all be done from one place. Figure 7 shows a system arranged in this way. This is the system used almost exclusively where the



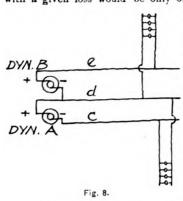
wiring is concealed. It requires a greater amount of wire, but it does away with the safety-fuse blocks scattered about in unsightly and inconvenient places, and makes it possible to provide a special place for them, while the number warrants the construction of a receptacle that will be unobtrusive.

The three-wire system is a special form of the multiple system and is largely used because it effects a considerable saving in copper. Figure 8 will serve to illustrate the principle. Two dynamos having the same voltage are used. Suppose the voltage of each to having the same voltage are used. Suppose the voltage of each to be 110 volts. Then A is creating a difference of pressure between c and d of 110 volts, and B is creating a difference of pressure between d and e of 110 volts, so that there is a resulting difference of pressure between c and e of 220 volts. The positive side, or the side of highest potential, of A is the negative side, or side of lowest potential, of B, just as it might be with two water-falls, one above

¹Continued from No. 971, page 44.



the other. If now the lamps were connected directly between c and e, the system would be working at a pressure of 220 volts, and, as has been seen before, the wire necessary to carry a certain current with a given loss would be only one-fourth as much as would be necessary with one-half the vol-



tage, or 110 volts. But with 220 volts it would be necessary to run two 110-volt lamps in series or to have 220-volt lamps. There are disadvantages, however, in both these alternatives that would counterbalance the advantage in the saving of copper, and 110-volt lamps are used with the two dynamos in

the following way:

A wire d, called the "neutral wire," is run with the other wires, c and e. Suppose that

wires, c and e. Suppose that all the lamps are turned off, excepting one lamp between e and d. Dynamo A will have no work to do and will be running idle, while dynamo B will be supplying current to the one lamp through the wires e and d as if the circuit were a simple multiple system. But suppose now that a lamp is turned were a simple multiple system. But suppose now that a ramp is tarted on between c and d. In the conventional way of speaking, dynamo B will be tending to send the current required by one lamp, from its positive side through the wire e to the lamp, and back through the wire d to the negative side of the dynamo, while dynamo A will be tending to send the same strength of current from its positive side through the wire d in an opposite direction. The result of the tendencies is a neutralization and the system will now work just as it would if the wire d were not there at all and the two lamps were in series on a 220-volt circuit; only, since the wire is there, if anything happens to cause a break in one lamp-circuit, the other lamp thing happens to cause a break in one lamp-circuit, the other lamp will be run by its dynamo through the neutral wire as in the ordinary two-wire system. The result is similar with any number of lamps on the two sides of the neutral wire. If there are 10 lamps between d and e, each requiring $\frac{1}{2}$ ampère, and 15 lamps between c and d, then dynamo B will tend to send a current of 5 ampères back along the neutral wire, and dynamo A will tend to send a current of $\frac{1}{2}$ ampères out along the neutral wire. The result will be a current of $\frac{1}{2}$ ampères out along the neutral wire, 5 ampères from dynamo $\frac{1}{2}$ heing neutralized by the 5 ampères from dynamo $\frac{1}{2}$

A being neutralized by the 5 ampères from dynamo B.

In wiring a building for the three-wire system, the three wires are run together in the mains and branches, and the taps are taken off from the neutral wire and either of the other two in such a way that the loads on the two sides of the system will balance as nearly as possible. It is not possible, of course, in practice to get an absolute balance, but the neutral wire may frequently be only onehalf or two thirds the size of one of the outside wires. But even though the three wires are all the same size, there is only three-eighths as much copper used as would be necessary in the two-wire system running at the same voltage, with the same loss. For, as has been noticed, without the neutral wire the system is working at a pressure of, say, 220 volts, and the copper required is only one fourth as much as would be required with a system running at a pressure of 110 volts. If the neutral wire is the same size as one of the outside wires, the weight of copper is increased fifty per cent and becomes three-eighths as much as would be required with the 110-RUSSELL ROBB. volt circuit.

(To be continued.)



TWENTY-EIGHTH ANNUAL CONVENTION OF THE AMERICAN INSTI-TUTE OF ARCHITECTS.

HE Twenty-eighth Annual Convention will be held, by invita-tion of the Architectural League, in their rooms in the Fine Arts Building, 215 West 57th Street, New York, on Monday, Tuesday and Wednesday, October 15, 16 and 17, 1894. Order of proceedings will be as follows:

MONDAY, OCTOBER 15. - MORNING SESSION - 10 A. M.

The members of the Institute will assemble in the rooms of the Architectural League promptly at 10 A. M.; will register their names, and at 10.30 the President of the Institute, Mr. Daniel H. Burnham, of Chicago, will deliver the annual address, after which the Convention will be declared open for business.

ORDER OF BUSINESS.

 Report of the Board of Directors.
 Report of the Treasurer and appointment of the Auditing Committee.

3. Reports of Chapters, a synopsis of which will be read by the

4. Reports of the Standing Committees:

Committee on Foreign Correspondence, R. M. Hunt, Chairman. Committee on Education, Henry Van Brunt, Chairman. Committee on Uniform Contract, S. A. Treat, Chairman. Committee on Conservation of Public Buildings, R. M. Upjohn. Chairman.

5. Consideration of the Annual Address of the President, and of the reports of the Chapters and Standing Committees, followed by the appointment of Special Committees, to which recommendations contained therein shall be referred.

6. Report of Special Committees on the Revision of the By-laws and on the Relations of the Chapters to the Institute, and consideration of the same.

It is proposed that this session shall be continuous with the exception of a recess for luncheon.

EVENING SESSION - 8 P. M. - PAPERS AND DISCUSSION.

"Modern Style founded on Ancient Greek Architecture,"
 Russell Sturgis, F. A. I. A., New York.
 "A Short Study of Greek Detail," (illustrated by lantern

slides), Thomas A. Fox, Junior Member, Boston Chapter, A. I. A.

3. General discussion of the several papers in which it is expected that Ex-President Richard M. Hunt, LL.D., etc., and Messrs. Henry Van Brunt, R. D. Andrews, and other Fellows of the Institute will participate.

TUESDAY, OCTOBER 16. - MORNING SESSION - 10 A. M.

1. Reports of Committees.

Unfinished business of previous day.

2. Combined Salaria (2) 2. Combined With Classical, (a) "Emotional Architecture as Compared with Classical,"

Louis H. Sullivan, F. A. I. A., Chicago.

(b) "Early Italian Church Architecture," W. P. P. Longfellow, Cambridge, Mass.
(c) "The Barbarians in Italy," C. A. Cummings, F. A. I. A.,

Boston.

(d) "Travelling for Architectural Study," Frank Miles Day,

Philadelphia.

(e) "Travelling Scholarships — What Work must be done by the Student?" R. W. Gibson, F. A. I. A., New

4. Appointing of Committees to nominate officers of the Institute for the ensuing year, and to suggest a place in which to hold the next annual convention.

It is proposed that this session, like that of Monday, shall be continuous with the exception of a recess for luncheon.

EVENING SESSION — 8 P. M.

Discussion of the question of High Buildings and Fire Protection, preceded by Papers.

1. "High Buildings and Good Architecture: What Principles should govern their Design?" Thomas Hastings, F. A. I. A., New

2. "Protection against Fire: The Architect's Attitude and Duty; Skeleton Construction in its Relation to the Fire Department in Boston," T. M. Clark, F. A. I. A.

3. General discussion on the above papers, in which it is expected that Messrs. George B. Post, W. L. B. Jenney, C. H. Blackall, R. H. Robertson and other Fellows of the Institute will participate.

WEDNESDAY, OCTOBER 17 .- MORNING SESSION.

1. Reports of Committees and their consideration.

2. Unfinished business.

3. "Concrete Construction and Concrete as a Protection to Wrought-iron and Steel," E. L. Ransome, Chicago.

4. Election of officers and others, and selection of a place for the next annual convention.

5. Miscellaneous business.

Prompt attendance on the successive sessions, at the hours indicated, is very particularly requested; as it is only thus that the allotted time can be thoroughly utilized.

The afternoon will be reserved for a visit to the large-scale models of famous edifices and the casts collected by the Willard Architectural Commission, for exhibition in the Metropolitan Museum of Art in the Central Park; and the residue of the day, if any, or part of the following day, will be devoted by resident architects to showing visiting architects such current building-work in the city as the latter may desire to see.

EVENING.

A "Smoker" (informal) from 9 to 12, by the invitation of the Mechanics' and Traders' Exchange, in the rooms of the Building Trades Club, 117 East Twenty-third Street, to which all attending the convention are cordially invited.

Committee of Arrangements: E. H. Kendall, from the American Institute of Architects and the New York Chapter; Chas. F. Mc-Kim and Alfred Stone, from the American Institute of Architects; and Thomas Hastings and A. J. Bloor, from the New York Chapter. EDWARD H. KENDALL, President.

ALFRED STONE, Secretary.

THE WESTERN NEW YORK CHAPTER OF A. I. A.

THE Western New York Chapter of the American Institute of Architects held its annual meeting in Rochester, N. Y., Monday, September 24. The meeting was called to order by President F. H. Gouge of Utica, with H. H. Bickford of Elmira, as Secretary, F. H. Gouge of Utica, with H. H. Bickford of Elmira, as Secretary, and Otto Block of Rochester as Treasurer, each one giving, in order, his respective report. Two important matters were discussed and resolutions favoring each were adopted. The architects reported unanimously in favor of the proposed State license law for architects, whereby each one in the profession will be prohibited from styling himself a "professional" architect unless he has first been given a State license. The Legislature two years ago passed such a law, but the Governor failed to sign it. It is now proposed to revive the bill, on the ground that public safety requires that the buildings in our cities shall be in the hands of competent persons, the same as our physical bodies. The other point raised and adopted was that each Chapter shall be limited to certain boundaries, and shall not be allowed to infringe upon its neighbor's territory, as is now the case. allowed to infringe upon its neighbor's territory, as is now the case. This resolution will be submitted to the American Institute of Architects, whose annual session will be held in New York City this month.

The Chapter voted as favoring the adoption of the amendments to Article X of the By-laws of the American Institute, as proposed by

the Ohio Chapter.

the Ohio Chapter.

Thomas Nolan of Rochester read a paper descriptive of the development of architectural style, with stereopticon illustrations. President F. H. Gouge gave an interesting talk on his recent rambles in France, and in his address alluded feelingly to the loss that the Chapter had met with in the death during the past year of W. W. Carlin. Later in the meeting a resolution was presented by Mr. J. H. Pierce and passed, expressing the regret of the Chapter at the loss that had been sustained by the death of Mr. Carlin.

A number of water-color sketches and pen-sketches, illustrative of various structures and sections thereof, were displayed for criticism.

A number of water-color sketches and pen-sketches, illustrative of various structures and sections thereof, were displayed for criticism. These officers were elected: J. H. Pierce, Elmira, N. Y., President; J. R. Church, Rochester, N. Y., Secretary; Charles F. Crandall, Rochester, N. Y., Treasurer; Otto Block, Rochester, N. Y., First Vice-President; Joseph Blaby, Palmyra, N. Y., Second Vice-President; Charles E. Colton, Syracuse, N. Y., and Frederick H. Gouge, Utica, N. Y., Executive Committee.

The meeting closed with a banquet held in the evening at the

The meeting closed with a banquet held in the evening at the "Alberger" café, at which a very instructive paper was read by Mr. Thomas Nolan on the "Cancelleria Palace of Rome," followed by an interesting account of a "Bicycle Trip through France" by Mr. F. H. Gouge. Both papers were illustrated by the stereopticon and were highly enjoyed by all present.

JOHN R. CHURCH, Secretary.

BEAUX-ARTS SOCIETY, COMPETITION NO. 1. - TERMS OF COM-PETITION.

This competition will be open to all students of the members of the Beaux-Arts Society, the Department of Architecture of Columbia College, the University of Pennsylvania, Harvard University, Boston Institute of Technology, Cornell University, School of Architecture, Syracuse, N. Y., and to all members of the New York Sketch Club, Boston Architectural Club and Philadelphia T-Square Club.

All drawings must conform strictly to the conditions of the programme, and must be mounted on strainers without frames, or glass, and must be delivered, express pre-paid, on or before December 1, 1894, at the rooms of the New York Sketch Club, 1473 Broadway, addressed to Mr. G. W. E. Field.

The drawings will be exhibited publicly for at least two days prior

to the judgment, and three days after.

The drawings will be judged by the following members of the Beaux-Arts Society:

JOHN M. CARRÈRE, Committee on Education.
JOHN G. HOWARD,
W. A. BORING,
E. L. MASQUERAY,
WHITNEY WARREN,
THOS. HASTINGS,
W. B. CHAMBERS,
U. FOWARD, HOWE J. EDWARD HOWE,

G. T. Snelling, who will award a medal to the design placed first, and will award first and second mentions according to merit, to such other designs

as may seem worthy of consideration.

All drawings must be sent for within one week after the close of the exhibition. Out-of-town drawings will be returned by express,

upon request, at the owner's expense.

All intending competitors will please notify Mr. John M. Carrère,
No. 44 Broadway, New York, not later than the 15th day of November, so that suitable arrangements may be made for the exhibition of the drawings.

INSTRUCTIONS.

The following drawings will be required, and none others will be

A plan of the buildings which may show the surroundings and

approaches, and a section at the scale of one-eighth inch to the foot; the principal elevation at the scale of one-fourth inch to the foot; and a drawing of the detail of the order, at the scale of three inches to

All drawings must be rendered in wash, with cast shadows.

Address all communications to Mr. John M. Carrère, No. 44

Broadway, New York, or Mr. G. W. E. Field, No. 910 Lincoln

Building, Union Square, New York.

PROGRAMME. - A SMALL THEATRE FOR CANTATAS.

A wealthy amateur of music, whose winters are spent upon his vast estate in the South, has decided to erect at the end of his grounds a small theatre for the representation of cantatas and, occasionally, of light plays.

light plays.

This little building should consist of an auditorium, with or without a balcony, capable of seating eighty or one hundred persons luxuriously; a suitable stage, without, however, too much space in the wings; and vestibules, dressing-rooms, green-room, toilet-rooms, etc. — in fact, all that should be found in such a temple of scenic art.

The owner has acquired an exquisite capital of the Ionic order from one of the early Roman Temples, and proposes to use it in the decoration of the porch. The building will, therefore, naturally conform to the note thus struck, so that all shall be in perfect keeping.

The greatest dimension should not be more than eighty-five feet.

The plan and section are to be rendered at a scale of one-eighth inch to the foot; the principal elevation at twice that scale; and a drawing of the detail at a scale of three inches to the foot.

Drawings to be rendered December 1, 1894.

Drawings to be rendered December 1, 1894.



Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

THE WARNER HOUSE, PORTSMOUTH, N. H.

[Gelatine Print, issued with the International and Imperial Editions only.]

This house is said to be the oldest brick building in this eminently sedate and interesting city. The house was built 1718-23 by Captain Macpheadris at a cost of £6,000, the brick being brought from Seedland

PROPOSED UNITARIAN CHURCH, SOMERVILLE, MASS. MESSRS. CRAM, WENTWORTH & GOODHUE, ARCHITECTS, BOSTON, MASS.

BERKSHIRE COUNTY SAVINGS BANK BUILDING, PITTSFIELD, MASS. MR. F. R. ALLEN, ARCHITECT, BOSTON, MASS.

THAYER ACADEMY LABORATORY AND GYMNASIUM, SOUTH BRAIN-TREE, MASS. MESSRS. HARTWELL & RICHARDSON, ARCHITECTS, BOSTON, MASS.

HOUSE FOR W. HENRY WALKER, ESQ., KENILWORTH, MD. MR. F. B. PYLE, ARCHITECT, WASHINGTON, D. C.

This building is intended to cost about \$8,000.

[Additional Illustrations in the International Edition.]

A HÔTEL ON THE RUE MONTCHANIN, PARIS, FRANCE. M. E. ESNAULT-PELTRIE, ARCHITECT.

[Copper-plate Photogravure.]

DETAIL OF THE PORTE COCHÈRE OF THE ABOVE. [Copper-plate Etching.]

> TWIN WINDOWS OF THE ABOVE. [Copper-plate Etching.]

COTTAGE AND STABLE AT HUNSTANTON, NORFOLK, ENG. MR. HERBERT IBBERSON, ARCHITECT.

THE local stone known as "Car," a stone of rich brown color and The local stone known as Car, a stone of the stone coarse texture, has been laid in thin undressed blocks, the mortar coarse texture, has been laid in thin undressed blocks, the mortar coarse texture, has been laid in thin undressed blocks, the mortar coarse texture, has been laid in thin undressed blocks, the mortar being brushed out and kept well back from the surface. The roof is covered with quick weathering tiles and considerable projection is given to eaves and gables. This is an attempt to revert to the traditional method of building in the district, now almost entirely superseded, popular taste being apparently best pleased by cold-looking slate roofs innocent of eaves, and walls dressed as smooth as the nature of the stone will permit them to be.

A TITLE-PAGE.

The drawing, which has been reproduced in this illustration, was exhibited this year at the Royal Academy. In style it recalls some Renaissance examples. The designer is Mr. E. H. Turner.

OLD GATEWAY, SAN REMO, ITALY.

THE illustration is taken from a drawing by Mr. W. Thomson, which was in the exhibition of the Royal Academy.

GARDEN ENTRANCE.

THE original drawing was prepared by Mr. R. W. Bedingfield, of Leicester, and was among those in the Architectural Room of the Royal Academy.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

OUR WORKINGMEN.

BOSTON, MASS., October 1, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT :-

Dear Sirs, - Who is to blame for the unskilled condition of our workingmen, but the system of education established by law? workingmen, but the system of education established by law? Men and women are taught to prattle French and Greek and do not know enough to shingle a barn. They are taught to talk about Diogenes and do not know enough to plant potatoes nor have knowledge to hoe them. We need public works where old and young men may be educated, and it will pay the nation to pay a fair rate of wages that men and women may be strong and healthy. Please do not scorn the workers as you do. We are not responsible for being here.

I spent much labor to educate myself. Many of my companions dropped in a grave in the struggle and many a time the battle to be honest and get food and place to rest has been hard, and now I see men that know only how to shovel and pick are in a more independent mode of life than many an educated mechanic. We are not such dunces but what we can learn other trades in odd hours, when we have a chance. You leaders are the ones to be blamed, if any, because of the unskilled condition of mechanics. I had to protest against being kept at sweeping floors for mechanics, when I had agreed to work at \$1.25 per day that I might learn a trade. When I worked for \$1.50 per day, my employer wanted to keep me laying floors all the time, hence you must know a man must battle even to learn a trade in America. When I protested against washing floors learn a trade in America. When I protested against washing floors and sweeping rooms and halls day after day at \$1.25 per day, my employer said, "Do you expect to use your tools all the time"? and when I told him that was why I had agreed to work for so small wages, he appeared to be surprised and told me he would not want my services only one week longer, and I had all the time been doing work that he had paid laborers \$2.00 per day to do.

We need trade schools, and farm schools, in every town in New England.

Yours respectfully.

Augus Franklin

AURIN FRANKLIN. Yours respectfully,

[The very last thought that could enter our minds is to entertain "scorn" for self-respecting and industrious mechanics. For those mechanics who have so lost their self-respect as to cast away their birthright and place the welfare of their wives and children at the discretion of conscienceless walking-delegates, we feel pity—not scorn. Scorn and loathing we do feel for the mischief-makers who, for their own personal ends, are willing to inflict wanton injury on helpless women and children.—Eds. American Architect.]



OSTON, MASS.—Exhibition of the Works of Adolf Menzel; also, Drawings by John Trumbull: at the Museum of Fine Arts, in October and

BRIDGEFORT, CONN. — Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery, September 8 to October 27.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil paintings and Sculpture: at the Art Institute, October 29 to December 17.

New YORK, N. Y. - Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

Philadelphia, Pa. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.



Building on Quicksands.—The well-known German engineer, Neukirch, in a paper on making foundations in quicksand, urges that the sand on which the foundation is to rest be converted into solid concrete by blowing into it, by air pressure, powdered dry hydraulic cement, using for this purpose a one-and-one-half-inch pipe drawn to a point at its lower end and having three or more three-eighths-inch holes. In practice, this pipe is joined at its upper end by a rubber tube to an injector, which is connected to a source of compressed air and is fed with dry cement, the sinking of the pipe to the depth required being facilitated by blowing air through it during its descent and setting it in motion, a depth reaching to 19 feet being thus quickly accomplished. After this, the cement is fed in and carried into the sand by the air, which, being forced up through the former, insures a thorough mixture with the cement, and the tube is then slowly withdrawn, the supply of cement being continued until it reaches the surface. The concrete formed in this way takes several weeks to harden and requires some months to attain its full strength. Further, the whole area to be treated is divided into a number of small areas of about one square foot each, and, the tube being sunk successively and operated on each of - The well-known German QUICKSANDS. each, and, the tube being sunk successively and operated on each of the squares, it is found that the mixture of the sand and cement produced occupies less space than did the sand alone before the operation. This method of operation has been resorted to successfully in cofferdam construction and sewer work where such had to be laid in quick-sand. — American Engineer and R. R. Journal.

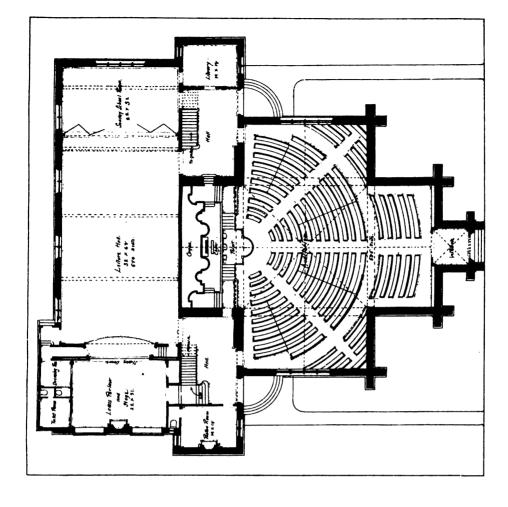
Sinking a Colliery Shaft by the House Colliery in Belgium in an interesting manner by the Poetsch process, which has been employed once or twice in this country for similar work. A number of metal pipes were first sunk outside the limits of the proposed shaft to a depth lower than a stratum of water-bearing sand nearly forty feet thick, which occurred at a depth of about two hundred feet. These tubes were quite large and closed at the ends, and inside them were placed others open at the ends, so that the interior of each main tube was divided into two chambers. A very cold solution of chloride of magnesium was then forced down the smaller tubes, and rising outside them in the larger ones it gradually froze the water in the quicksand until it became hard enough to be worked like rock, so that a shaft could be sunk through it. The water flowing through the quicksand when work began amounted to over 4,000 gallons an hour, and to freeze it required eighteen of the double sets of tubes, which were sunk on the circumference of a circle about eighteen feet in diameter. — Boston Transcript.

How Emperor William I repaid an Insult.—A curious relic of bygone days may be seen on a house in Berlin. Two blacksmiths lived opposite one another in one of the streets of that city, whose trade rivalry became the talk of the neighborhood. One day, the Emperor William I, who was fond of going about the city disguised as a farmer, in order to "feel the pulse" of the people, rode up to the door of one of the blacksmiths to have his horse's shoe fastened. A daughter of the rival blacksmith, to show her contempt for this customer, put out her tongue and distorted her face with a horrible grin. The king called together the wood-carvers of the city, and offered a prize for the most hideous face of a woman they could devise, and when the king had selected the most frightful specimen produced—one with a tongue lolling out of its wooden mouth—he rode over with it to the blacksmith's shop. There, to the consternation of the women, he ordered that the fury's head should be nailed over the door, as a lesson to rivals and a warning against petty spite.—Answers.

Profits in Chicago Realty. — A Boston real estate dealer, in talking of investments in realty the other day, spoke about the speculations in Chicago properties a dozen or fifteen years ago. In 1879 or 1880, he said, the Dorr block on State and Madison Streets, was bought by a Massachusetts capitalist for \$250,000. He received \$300,000 in rents for the block, then capitalized it at five per cent on \$700,000. The same Massachusetts man bought another parcel on State Street for \$105,000, and four years ago refused a cash offer of \$285,000. His first rental was \$10,000, and in 1890 he was realizing \$19,000 from the property on a long lease. Another piece of business realty on Dearborn Street, also owned in the East, was bought in 1880 for \$85,000, and was at once leased for ten years for eight per cent net on the cost, the taxes to be paid by the tenant. When the lease expired, the building had nearly paid for itself, and the owner sold it for \$200,000 in cash. These parcels of realty represented a first cost to the investors of about \$450,000. At the end of eleven years they had received a million dollars in rents, and declined to sell for \$1,810,000. No other city in the country east of the Mississippi can show such a record of rapid and enormous profits. — Boston Transcript. PROFITS IN CHICAGO REALTY. - A Boston real estate dealer, in

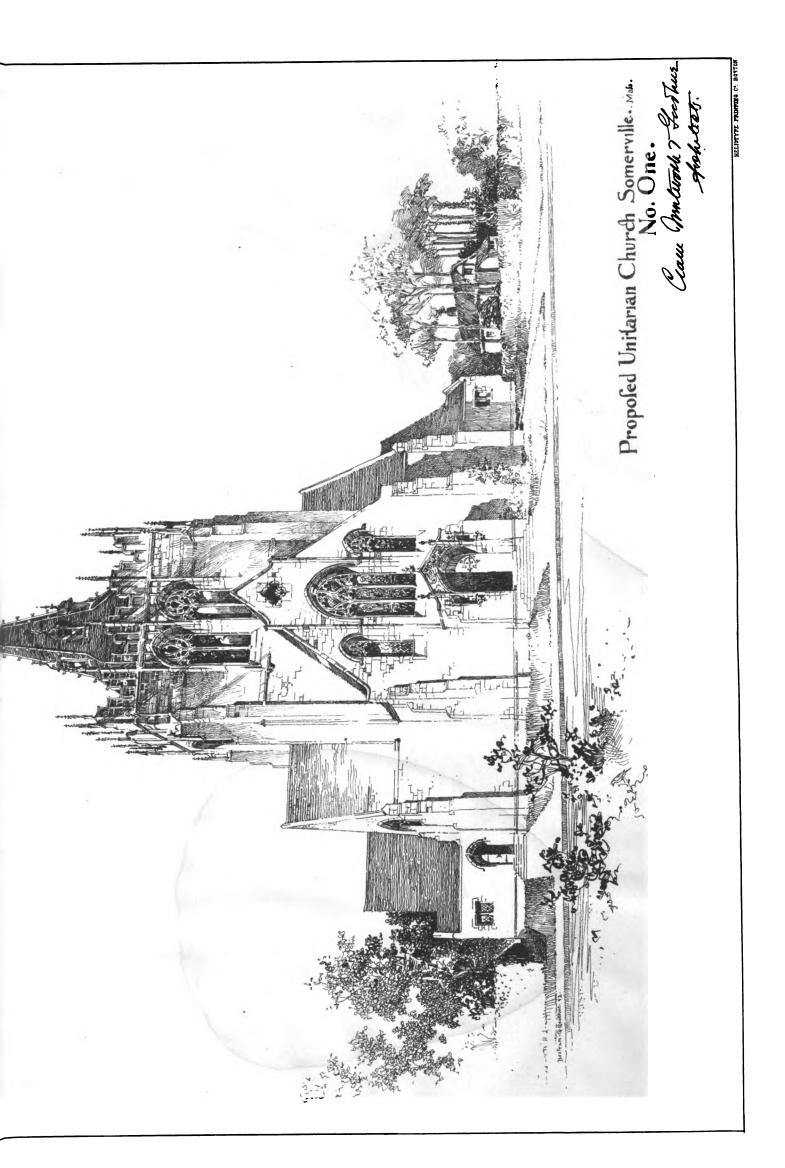
Discovery of Cretan Hieroglyphs.—Arthur John Evans, the distinguished archæologist, keeper of the Ashmolean Museum at Oxford, has been doing some remarkable work in Crete the past year, the results of which, to judge from the preliminary survey, will be of exceptional value. He has found a system of hieroglyphics distinct from both the Egyptian and the Hittite, of which he brings back eighty types, and he discovered in other remains an obvious connection and links between the Mycenean glyptic art and the Egyptian decoration of the Twelfth Dynasty. He tells also of a wonderful Cyclopean city, now called Goulas, unrivalled in extent among the primitive remains in Europe, with vast walls, terraces, and temples in strata, one on the other, which was deserted before the dawn of history, and which, he believes, research and excavation will prove to have been the centre of the ancient Ægean civilization.— N. Y. Times. DISCOVERY OF CRETAN HIEROGLYPHS. - Arthur John Evans, the

S. J. PARKHILL & Co., Printers, Boston, U. S. A.

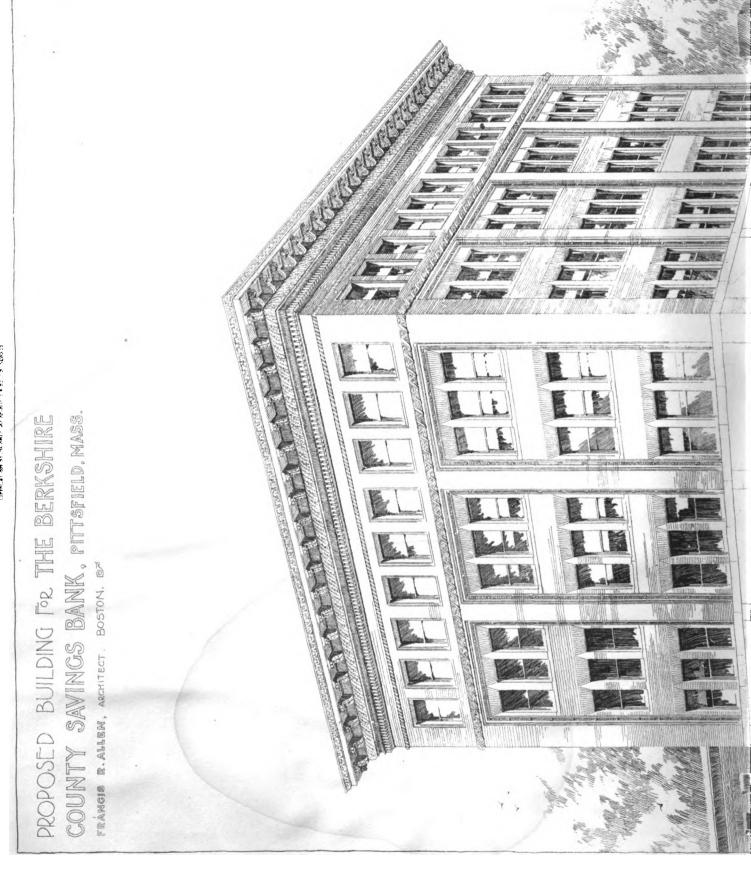


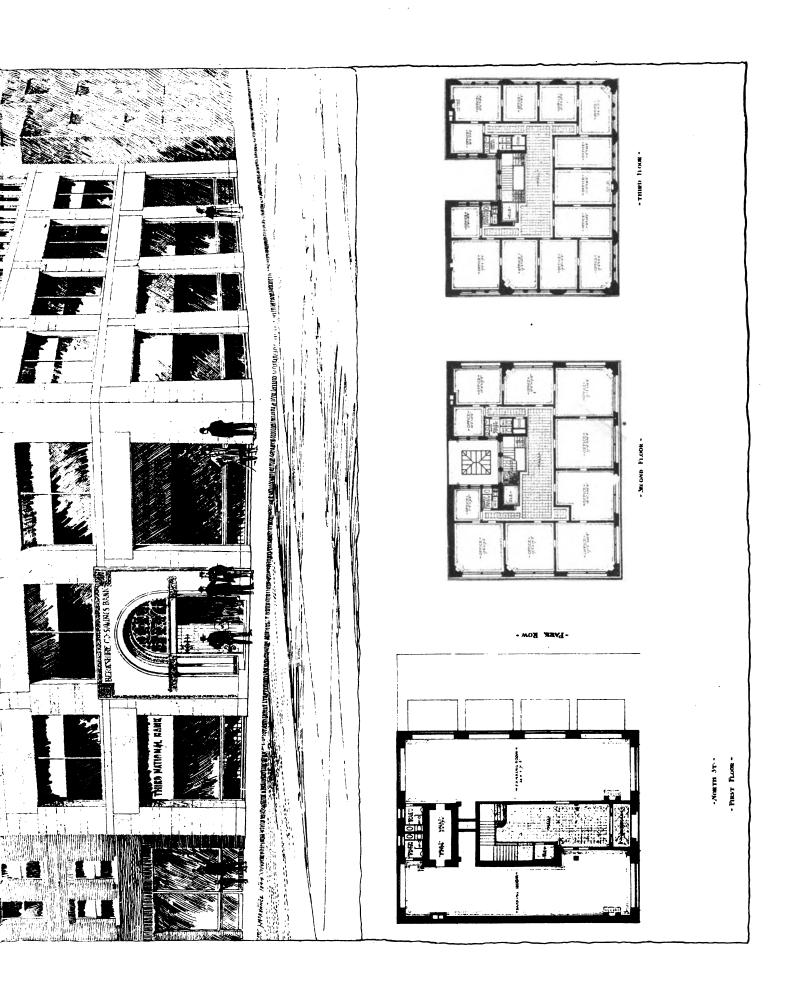


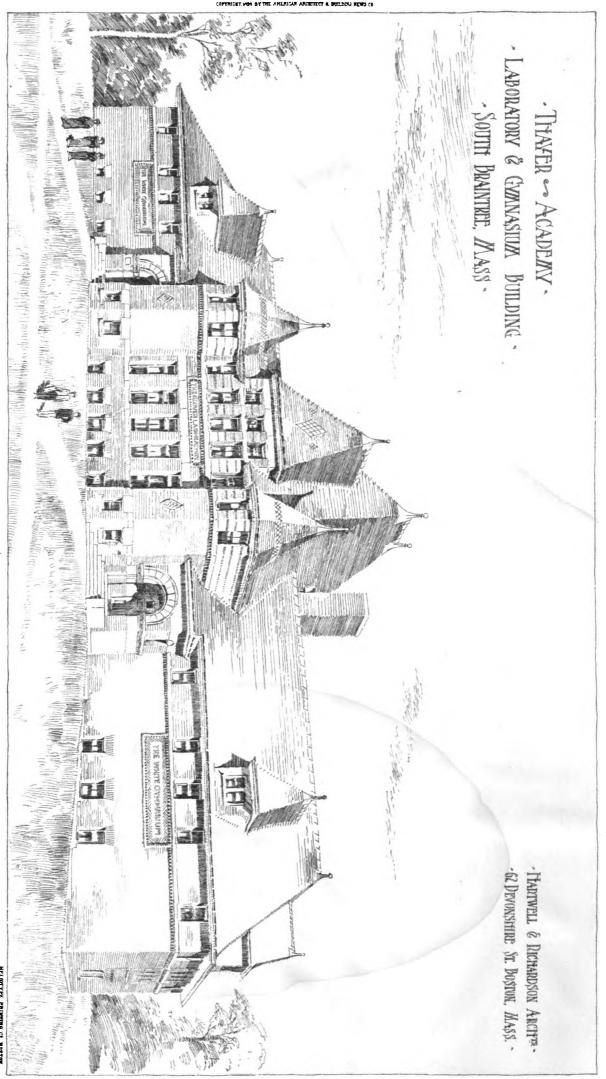




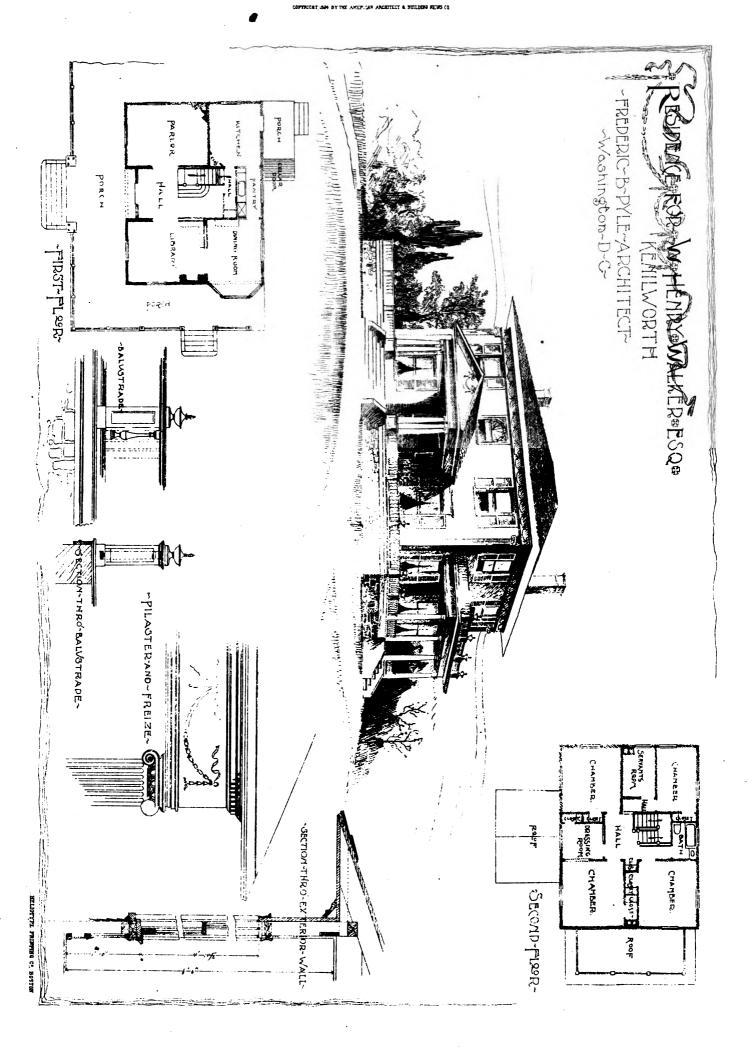
MERIGAN ARCHITECT AND BUILDING LEWS, OCT. 6 1394.







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OCTOBER 13, 1894.



The Sixty-fourth Annual Exhibition of the Pennsylvania
Academy of Fine Arts. — A New German Technical Journal.
— The Rose Gardens of the Balkans. — The Manufacture of
Attar of Roses. — A German Architect's Impressions in Amer-

LETTER FROM ST. LOUIS.

LETTER FROM ST. LOUIS.

ILLUSTRATIONS: —

Palazzo Municipio, Brescia, Italy: Two Sheets. — Herald Building, Baltimore, Md. — Colonial Work in the Genesee Valley: The Ayrault House and Front Entrance to the Court-house, Geneseo, N. Y. — Colonial Work in the Genesee Valley: Mantels at Pittsford and Geneseo, N. Y., and Colonial Furniture.

Additional: The Fine Arts Building, World's Columbian Exhibition, Chicago, Ill. — Chamber of Deputies, in the New Houses of Parliament, Budapest, Hungary. — House of Lords in the Same. — Old Rath-haus, Schwalenbger, Lippe-Detmold, Germany. — Royal Chamber in the Fortress of Hohen-Salzburg, Austria. — Church of St. Agatha, for the Winchester College Mission, Portsmouth, Eng. — Street Corner in Wokingham, Eng.

THE Sixty-fourth Annual Exhibition of the Pennsylvania Academy of the Fine Arts will open on Monday, December 17, next, and close on the twenty-third of February following. The exhibition will include painting, sculpture, architectural designs, drawings, etchings, engravings, stained-glass, tapestry and so on, works only being received which have not before been publicly shown in Philadelphia. Works must be entered on or before November 17, 1894, and, if proper notice Works must is given, works from Boston, New York and Philadelphia will is given, works from Boston, New York and Philadelphia will be collected and returned, free of charge. The usual recompenses, consisting of the Temple prize, and the two Temple medals; the Walter Lippincott prize, of three hundred dollars; the Mary Smith prize, of one hundred dollars, and the Academy gold medal, are open to exhibitors. The Architectural Department of the exhibition, which will include not only designs for hulldings but drawings of detail models and only designs for buildings, but drawings of detail, models and sketches, is subject to the same conditions as the rest, but will close three weeks earlier, on February 5.

WE have received the first number of a handsome weekly journal, the Fortschritte der Fortschritte journal, the Fortschritte der Industrie, published by Paul Werther, in Berlin, at fifteen marks a year, including foreign postage, and edited by Dr. G. F. Henning. According to the prospectus, the aim of the publication is to show from week to week the latest improvements and ideas in all branches of what may be called technology, including mechanical, chemical and other industries. In accordance with this intention, we find the ensuing pages filled with descriptions, in many cases illustrated, of the most recent inventions in various departments of industry, accompanied by a considerable number of those workshop receipts so dear to the German heart, and by some well-chosen articles on general science. If such a journal were to appear in this country, we should be quite sure that the descriptions of patented articles, especially where accompanied with illustrations, were paid for by the patentees or manufacturers; but whether this is the case with Dr. Henning's journal, we cannot say. The prospectus says that one of the uses which the paper intends to fulfil is the "unmasking of swindles and impositions." If its favorable comments are to be bought with cash, there is likely to be an occasional struggle in the editorial office as to whether a good customer shall be "unmasked" or let alone; but if the

"unmasking" is looked upon as a duty, there will be plenty of subjects to try it upon. It is hardly necessary to say that, in any case, the paper is likely to be edited, as its first number shows, with knowledge and discrimination; and if the invitation which it extends to its readers to communicate fully their ideas and experiences is accepted, it is likely to be very useful to those whom it more particularly addresses.

LE GENIE CIVIL gives an interesting account of the manufacture of attar of roses, which, since the emancipation of the Balkan Provinces, has become a great industry in Bulgaria, and has been taken up on a large scale in Germany. We have all been accustomed to connect the fabrication of attar of roses with Persia and Syria, and, even now, India and Constantinople furnish probably the largest markets for it; but, although the art of making it was discovered in Persia, the manufacture has now nearly or quite died out, and the centre of the business is now the country about Kazanlik, on the south slope of the Balkans, close to the Shipka, or Wild Rose Pass, famous in the history of the Russo-Turkish war. The rose-growing belt is situated at an average altitude of a thousand feet above the sea, and extends to a length of about seventy miles, with an average breadth of ten miles. On this ground are produced annually from five to six thousand million rose blossoms. The number of varieties cultivated is very small. Ninety per cent of all the blossoms are taken from a bushy variety of the Rosa Damascena, or damask rose, known to our gardeners mainly as the ancestor from which the infinite variety of hybrid perpetual roses derive a large part of their blood. Of the remaining ten per cent, a part are gathered from the white musk-rose, which is frequently planted as a hedge around the fields of pink Damascena; while the rest are furnished by a dark-red variety of Damascena. Other sorts of roses have been tried, but some yield no attar at all, and others give an essence having the perfume of violets, or pineapples, or hyacinth, rather than of roses; so that the growers have returned to the original kind.

N order to obtain the precious perfume in the largest quantity, and in its best condition, the flowers must be cut while the dew is still on them, and every morning, during the season of bloom, which lasts from about the twentieth of May to the twentieth of June, troops of boys and girls climb the mountain slopes, long before sunrise, to gather the freshlyopened flowers. The blossoms are thrown into baskets, and taken immediately to the distillery, it being important to finish the operation on the day that the flowers are gathered. As the baskets are received, their contents are piled in cool, dark store-rooms, from which they are taken for distillation. The stills are of the simplest construction, of tinned copper, each of about the capacity of a barrel. About twenty-five pounds of roses are put in each still, which is then filled about three-quarters full of water. The top of the still is put on, and the fire lighted. The worm is cooled with running water, and in about forty-five minutes, when about one-fifth of the contents of the still has been drawn over, the distillation is stopped, the still emptied, and the process repeated with a fresh charge, until all the morning's crop of roses has been treated. The product of this first distillation is rose-water, exactly like that which some of us used to see our grandmothers manufacture in the same way. To separate the attar, a second distillation is necessary. The rose-water is put again into the stills, and about one-third its bulk of what is called "second rose-water" is drawn over. This is now a highly-perfumed liquid, turbid with suspended globules of an oily substance, which is the precious attar. To allow the attar to separate, the distillate is put into bottles with long necks, which gradually become filled with the oily essence. When the separation is complete, the attar is removed with a spoon, which has a small hole in the bowl. The water runs off through this hole, leaving the oil, which is put into the well-known ornamental bottles for sale. The attar sells for about six dollars an ounce, so that the industry is remunerative, although sixty thousand roses are required to make an ounce of attar. It is curious that the Bulgarian roses, although the mountain frosts make the crop a rather precarious one, produce much more essence than do the same roses elsewhere. After the war of 1878, the Turkish Government, having lost its Balkan province, and with it the rose-gardens, undertook to transfer the industry to Asia Minor, and planted great numbers of rose-bushes in the vicinity of Broussa. The bushes grew, and produced plenty of flowers, but so little attar could be extracted from them that the experiment was abandoned. The explanation appears to be that the rose, for the full development of its perfume, requires a cool climate; for within the last two years extensive plantations have been made in the neighborhood of Leipsic, and a manufactory established, which is said to treat now, during the season, three million roses a day, extracting from them about eight hundred pounds of attar per year. The distillery is placed in the middle of the rose-garden, so that the flowers reach the stills within a few minutes after they are cut.

MONG the German architects who visited this country last year, and wrote their impressions of it in the intelligent and dispassionate way so characteristic of the German professional man, no one, perhaps, has shown greater appreciation of the peculiarities of what may be called the architectural physiognomy of America than Herr Gmelin, some of whose letters have recently appeared in the *Deutsche Bauzeitung*. Speaking of the general impression made by the newer buildings of the great cities, Herr Gmelin says that he found it not always pleasant to see the modest structures of the earlier part of the century so overpowered as they are by the giants of the present decade. For example, just beside the Holland House, on Fifth Avenue, is the Collegiate Church, a very respectable, and even rather elegant structure, of gray marble. years ago, this part of Fifth Avenue was occupied by dwellinghouses, among which the Collegiate Church raised its marble spire with a quiet dignity which we can ourselves recall very well, as we lived then on the opposite side of the street, and admired it every morning from our windows. Now, its pretty cornice does not reach to one-third the height of the huge structure beside it, and even the tip of the spire barely rises above the eaves of the hotel. In its way, too, the Holland House is a beautiful building, but, as Herr Gmelin says, the impression made by the two structures is like that of a daughter, grown rich, great and worldly, looking down with a contemptuous smile upon the poor little pious mother beside her.

F course, this is the sentimental, rather than the practical way of looking at such way of looking at such matters, but sentiment in connection with architecture is a good thing, which ought to be recognized and cultivated. Where, however, the subject demands it, Herr Gmelin's remarks are practical enough to suit the most confirmed Philistine. Of course, the tall buildings of New York and Chicago astonish him, but he finds ample justification for them in the enormous cost of land in such cities. So incredible does the value of New York land appear to him, that he is obliged to confirm his statements, that the St. Luke's Hospital tract, two hundred by three hundred feet, was considered cheap at two million, four hundred thousand dollars, and that Mr. Cornelius Vanderbilt paid three hundred and seventy-five thousand dollars for a piece of ground twenty five by one hundred feet, to make into a garden, by the authority of a New York lawyer, "very familiar with such matters there." As to the character of modern American building, he is, like all other foreign observers, struck by the frankness and truthfulness with which materials are used. As he says, "we often connect with the idea 'American' some flavor of 'Humbug' and 'Swindle,' but in building matters we do so very unjustly." "Nowhere do we find here, as we occasionally do at home, wood made to imitate stone, or iron to imitate wood; and even stucco fronts and cornices seem entirely unknown. Brick front walls are very common, but they always show as brickwork, either in their natural color, or painted." Even the side walls of buildings he finds conscientiously treated in the same materials, and under the same design, as the principal front; and an apparent exception to this rule, which he finds in the Union Trust Company's building, in New York, which has its Broadway front in granite, and the rear façade in terra-cotta, in a similar design, he

explains by supposing that, as the back street is narrow, the difference in material was made to facilitate the construction of the rear façade in its limited space, rather than to save money. To our mind, this is high praise; and if truthfulness and originality alone cannot carry our architecture to the highest development, they can help it a long way on the road in which, as we hope, our art is travelling.

THE Massachusetts Trustees of Public Reservations have published their third annual report, which, as usual, is full of interesting matter. In the district immediately about Boston, their work has been, in great measure, transferred to the new Metropolitan Park Commission, but their efforts continue to do good in other portions of the State, by suggesting improvements which the citizens, in many cases, are able to carry out. In the course of their investigations, some curious facts have been brought to light. It seems that, in a large number of the Massachusetts towns, the original proprietors set apart a tract, in a central location, as a "training-field," and traces of these public training-fields still exist, in public "squares," or "parade-grounds," which, though often shorn, by the encroachments of the abuttors, of a large part of their original area, are still devoted to public uses. most curious examples of the gradual loss of public ownership in such territory is found in the little seashore town of Salisbury. Here, as elsewhere, a training-field was set apart, some two hundred years ago in the middle of the settlement, and, in addition, the beach was dedicated to public use. As years passed by, these grants seem to have been forgotten, and, more than a hundred years ago, a company of persons, calling themselves the Commoners of Salisbury, appeared as claimants of the beach lands. The foundation for their claim seems never to have been clearly understood, but it has been recognized by the town authorities since 1792, and the Commoners have paid taxes on the land, as their private property, for at least a hundred years. The towns-people, who still entertain some doubts as to the title of the Commoners, appointed a committee, two or three years ago, to investigate it, but the committee has, as yet, made no report. It seems not impossible that the claim of the Salisbury Commoners may be analogous to that of the owners of the Nantucket sheep-pastures, which attracted much attention a few years ago, as containing a reminiscence of the old Anglo-Saxon system of common ownership of land. In the Nantucket case, as we recollect, a large part of the island was originally assigned as pasture-land, to be held in common by the inhabitants of the settlement. Naturally enough, the children of these settlers, like the Roman patricians, considered that the right to share in the common land belonged to them, to the exclusion of persons who had joined the community since the grant was made; and until within a short time, perhaps the largest part of the island was owned by a few descendants of the old families, who could neither use nor alienate it. A more striking illustration of the development of a territorial aristocracy it would be hard to find anywhere; and if the land had been more valuable, the Macys and Starbucks and Coffins might have added to their family pride an insolence of wealth which would have been quite intolerable; but the ancient common pasture-lands were a burdensome possession, and, we believe, allotments have been made of portions of them, on petition of the owner to the Courts, so that they could be sold, and a good title given.

IN Salisbury, as the Commoners now have a valuable property, they will probably find means to hold their title; but, according to the report, another ancient encroachment, for which less justification can be found, has robbed the townspeople of a large part of their ancient training-ground. Many years ago, as it seems, some one whose garden bordered on the training-field planted a row of apple-trees on the training-ground side of the fence dividing it from his property. In the course of time, the fence rotted away, and, in making repairs, he set it up again outside of the apple-trees, which, with the ground under them, became thus annexed to his garden. No one, at the time, noticed, or objected to, this encroachment, which strongly resembles the operations by which some English land-owners have had the reputation of increasing their estates at the expense of the village commons; and the title of the successors of the apple-tree planters to the land is now undisputed.



THE GENESEE

THIRD ARTICLE

RAVELLING in the vicinity of Avon, Geneseo and Mount Morris, one can understand why the Indians gave to that region the name of the Beautiful Valley. It is like a great park. Gently sloping, wooded hills merge imperceptibly into cultivated lowlands through which the shallow river flows, sequestered in an avenue of foliage. The plain is diversified by trees and groves, and good straight reads looking like vellow ribbons on the prim and good straight roads, looking like yellow ribbons on the prim green dress of Nature, their ends concealed among the hills—lost in the tangle of her hair. Dignified old houses appear here and there, crowning the summit of some eminence, or half hidden amid the trees of the parks with which they are engirt—their air of aloofness atoned for by the always wide-open gates, which seem to extend a perpetual invitation to the traveller. Every turn of every road reveals new vistas, new surprises. The rawness and newness, which is so constant a characteristic of most of the scenery of our agricultural districts, seems here to have been trained quite away from the landscape, without giving place to mere smugness—the clean-shaven Philistine face of a too great prosperity. Nature is neither master nor servant, but the friend of man. Imagine, if you please, a park, from the wise hand of Olmsted, we will say, enormously enlarged and made for use as well as pleasure, and you will have formed a fairly accurate idea of this part of the Genesee

The curtain of history rolling up, reveals this beautiful valley the scene of a bloody drama—its denizens plunged in the most terrible kind of warfare. During the Revolution, a division of our army, under Sullivan, penetrated thus far into what was then a virgin wilderness, fighting the hostile Iroquois and setting fire to their villages. Just before the expedition reached the river, it met with its most determined resistance, and sustained its severest losses, chief among which was the capture of Lieutenant Thomas Boyd and his party by the Indians. That brave officer they tortured and put to death in a manner too sickeningly horrible to be related. One prefers, rather, to dwell upon the valley's later history, which was a singularly happy and peaceful one.

Many of the early settlers came from Maryland. They were not the ordinary type of pioneer, but men of parts, possessing wealth and culture, and belonging to a class—now, unhappily, extinct—of which Washington and Jefferson are representatives. They left so great an impress on the place of their adoption that their influence is potent still, to-day, and this accounts, in some measure, for the feeling one sometimes has of a civilization older than mere

influence is potent still, to-day, and this accounts, in some measure, for the feeling one sometimes has of a civilization older than mere dates warrant. For these first settlers did not begin anew, in pioneer fashion, but resumed, under new conditions and amid different surroundings, the lives to which they were accustomed. They built houses like the southern houses (sometimes even to the office, at a little distance from the main building, where the business of the estate was transacted), they kept slaves, whom they had brought with them, and each family had a carriage in which its



Old Hampton (now destroyed).

members went visiting, in true southern fashion - sometimes driving forty miles to dine with friends.

The descendants of these people — the Wadsworths, the Fitz-

hughs, the Carrolls, the Piffards - own and occupy the land to-day and still cherish the memory and keep alive the tradition of those early days. But in the heart of New York State, time cannot be made to turn backward nor stand still. The smart set now invade the valley annually, and disseminate an atmosphere of fin de siècle the valley annually, and disseminate an atmosphere of fin de siècle worldliness, which, mingling with what survives of the Colonial spirit, imparts to the social life of the place a peculiar and indefinable quality. Perhaps no other part of America is so like rural England in many ways, and it is so, not on account of any particular Anglomania on the part of any portion of its inhabitants, but because similar causes are bound to produce similar effects. As stated in a former article, there is a class here corresponding in many particulars to the nobility of England: it is composed of hereditary land-owners who lease the major portion of their land to hereditary land-owners who lease the major portion of their land to hereditary land-owners who lease the major portion of their land to farmers, and, living upon their estates the greater part of the year, in every way identify their interests with those of the rural population. These men lead large lives: are socially and politically important; have many friends. So, at certain seasons, when nature is at its loveliest, their houses fill with guests from abroad, and it is then that the resemblance to English country-house life becomes most marked. Fox-hunting completes the picture, and this deserves more than a passing mention.

deserves more than a passing mention.

The Genesee Valley Hunt is one of the oldest and best known in the country, and, unlike some others, the chase is after bona-fide foxes. The season opens about the end of September, and continues into the winter. The meets have the reputation of being very sportsman-like events, and not merely a new kind of "function" for the display of red coats and bob-tailed horses. The runs are for the display of red coats and bob-tailed horses. The runs are increasingly long and severe, so that no women, except the most intrepid, now participate. Anything on four legs is at liberty to follow the hounds, and the farmers of the vicinity are sometimes the most enthusiastic huntsmen. The travelling public, however little it may be interested in fox-hunting, is yet indebted to the institution for one thing, at least, and that is the Big Tree Inn at Geneseo, the existence of which would scarcely be possible were it not for the annual influx of the fox-hunting contingent, when its few rooms are warred for by Buffalonians and New Yorkers. Though supported principally by this patronage, the Big Tree Inn shines for supported principally by this patronage, the Big Tree Inn shines for



Furniture in Possession of Miss A. M. Piffard.

all, and few villages can boast of a prettier, neater or cleaner little hostelry. The traditional accessories of a country hotel are all conspicuous by their absence. There is no clerk behind the desk, simply because there is no desk for him to be behind; nor is there any hand-painted, Alpine-scenery-adorned cast-iron safe to stand behind him. The tablecloths do not bear on their surface maps of behind him. The tablecloths do not bear on their surface maps of the Dark Continent; there are no flies in the milk, nor dishwater in the coffee. The bed sheets are not winding shrouds with gravedamp on them; no transoms, like the ever open eye of Mormon, stare one into wakefulness all night — in short, it is blessedly unlike a hotel at all, but more, as the name implies, like an English tavern. Perhaps to me it has an exaggerated charm, because the Inn is an old Colonial house — the Ayrault mansion — remodelled and enlarged

At either end of the main street in Geneseo are the entrances to the estates of G. W. and W. A. Wadsworth. The latter occupies the homestead. Few traces of the original house remain—exteriorly, at least—it is so smothered in modern Colonial additions. riorly, at least—it is so smothered in modern Colonial additions. The grounds surrounding both residences are charming; exhibiting the best taste in landscape-gardening. A grove, in each case, screens the house from the road. A drive winds through it to the slightly elevated clearing where the house stands. The formal gardening, what there is of it, is here—affording just the necessary transition between the natural and the architectural.

The Fitzhugh house, Hampton, as it was called, was destroyed by fire two or three years ago. It is said to have been one of the finest, as it was one of the oldest houses in the valley. It was built by William Fitzhugh, a Marylander, about 1815, and it had for its most distinctive feature one of those high, cool porticos which are so characteristic of southern Colonial homes.

characteristic of southern Colonial homes

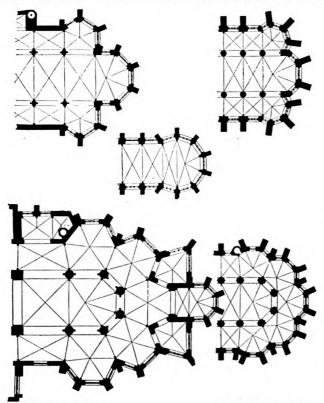
A drive of three miles from Geneseo, across the flats, brings one to the village of Piffard, where there is an interesting house, inhabited still by members of the family from which the place was named; (A drawing of it is shown at the beginning of this article.) Better than the house itself are the many old, rare and beautiful things which it contains; it is a veritable museum of antique furniture and china and other heirlooms of a past having its roots deep in the France and England of a former century.

¹ Continued from No. 969, page 27.

In this article and the two preceding, together with the drawings accompanying them, I have given a fairly representative, though far from complete, summary of the Colonial work of the Genesee country. Although meagre in amount, and inferior in quality, compared with that of the older and richer districts of the South and East, it has, nevertheless, seemed well worth preserving a record of, since it possesses, in full measure, those qualities which make the style such a rebuke to almost everything that we have done (in domestic architecture, at least,) since its decline. These qualities domestic architecture, at least,) since its decline. These qualities are, briefly: good sense, simplicity, elegance and refinement of detail, and, more than all else, beauty of proportion—the quality in which the work of the architects of to-day is most conspicuously lacking. If we are to have, in any sense, a renaissance of the Colonial style, let it be entered upon with greater knowledge, and more careful attention to the principles upon which the Colonial builders worked, and by means of which they achieved such admirable results. It was principally to this end—that of furnishing additional data for the study of the style—that the present work additional data for the study of the style — that the present work was undertaken.

CLAUDE FAYETTE BRAGDON.

THE INFLUENCE OF THE HANSEATIC LEAGUE ON THE ARCHITECTURE OF NORTHERN EUROPE. LII.



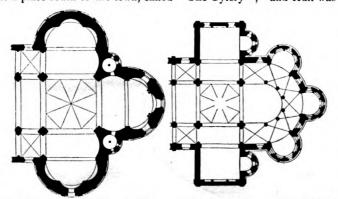
St. Katherine's, Lübeck: From Schloesser and Tischbein.

St. Nicholas's, Anklam: From Kallenbach.

St. John's, Stettin: From Kallenbach.

St. Peter's, Malmoe : From Lübke.

IN our own country, in the stone-producing county of Yorkshire, the enormous church of Holy Trinity at Hull was mainly brick, and the towers, walls and houses were all of them of bricks made at a place south of the town, called "The Tylery"; 2 and Hull was



The Apostles' Church, Cologne: From Boisserée

St. Stephen's, Nevers: From Viollet-le-Duc.

one of the important Hansa towns in England. The chapel of the

Red Mount and the Franciscan church at Lynn, Tattershall Castle, and numerous buildings of brick in the eastern counties, may be and numerous buildings of brick in the eastern counties, may be fairly attributed to the influence exercised over them by the important Hansa centres of Boston; Hull and Yarmouth. With what material the merchants built at Bishop's Gate we cannot now say, but from old engravings we may certainly assume that their establishment in the Steelyard was of brick; and the restoration of the



The Apostles' Church, Cologne.

privileges of the League in 1474 by Edward IV, after having been in abeyance for nearly thirty years, coincides with the period immediately preceding that great period of brick-building in England which included the halls of Gifford, Oxburgh, West Stow and Hargrave, and portions of the College at Eton. Although in the rebuilding of Bishop's Gate in 1479 we do not know what materials were used and though St. Ichel's Gate, Clerkenwell was reschield entirely. used, and though St. John's Gate, Clerkenwell, was rebuilt entirely in stone in 1504, the gate of Lincoln's Inn, erected in 1518, is wholly in brick.³ Indeed, we may date from the period of the League's restoration in England the almost complete displacement of stone as an ordinary building material around London, and the introduction and development of that brick architecture which culminated in such edifices as Hatfield and Hampton Court.⁴

I have now to refer specially to those features of architectural treatment which must be regarded as peculiar to the Baltic style, and which distinguish it, even more perhaps than the material employed, from other contemporary Gothic work. The most important of these, the arrangement of the church plans, seems to have been



St. Stephen's, Nevers

overlooked by most writers on the subject, and is not referred to in Fergusson's Handbook, although the two exceptional plans of the

³ Mr. Wyatt Papworth's "Renaissance and Italian Styles of Architecture in Great Britain."

⁴ About thirty years ago the east window of St. Mary's, Sandwich, was of moulded brick tracery, but in the restoration stonework was substituted. Careful drawings of it were made by the late Mr. Joseph Clarke.

¹ Read at the general meeting of the Royal Institute of British Architects, Monday, May 28, 1894, by J. Tavenor Perry, [A] and published in the *Journal* of the Institute. Continued from No. 979, page 117.

² The late G. E. Street (quoting Leland), "Brickwork in the Middle Ages," "Church Builder," 1863, p. 13.

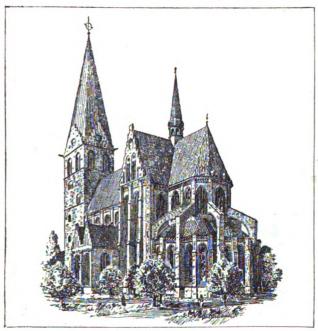
Dom and Marien-Kirche at Lübeck are therein published.¹ Yet this plan is essentially different from the methods adopted in France and The great differences existing between the origin and development of the plans of the eastern terminations of French and Baltic churches have scarcely been noticed, and no attempt seems to have been made to account for them; yet a comparison of the plans of the Cathedrals of Lübeck and Cologne will show that their designs could not have been developed from the same starting-point, or have been arrived at by the same methods. The eastern portions of the Dom at Lübeck were built, or at least were well in hand,² before the consecration of the choir of Cologne; but its eastern chapels are grouped in a manner quite unknown in Expanse, we time a way that in grouped in a manner quite unknown in France, yet in a way that, in grouped in a manner quite unknown in France, yet in a way that, in spite of some missing links, shows the origin of its design. In Viollet-le-Duc's elaborate analyses of French chevets we find that the invariable custom was to set out the radiating chapels on a semicircle, a method which was the outcome of the gradual addition of three or more apses, as chapels, to the great apse which terminated the choir; whereas the German method was the development of the earlier triapsidal arrangement of the Rhine churches.

As to the origin of the single ansidal on the triapsidal forms we

As to the origin of the single apsidal or the triapsidal forms we need not now inquire; but we know that the single apse, with the addition of smaller apsidal chapels, became the normal type of early French work, whilst the triapsidal, without added chapels, was representative of the churches of the same date on the Rhine. We may take, perhaps, as the best instances of perfected examples of these types, St. Stephen's at Nevers, which was consecrated in 1095, and the Apostles' Church at Cologne, which was completed a little earlier. These churches are, of course, well known to all of us; but I have prepared diagrams of them the better to indicate the essential differences existing between them; and from these it will be seen at a glance that the apse of Nevers is merely the termination of the choir, to which have been added the chapels, suggesting the future chevet; whilst at Cologne the three apses are grouped around the choir, and wanted but little development to produce the German form of chevet as at Lübeck. In fact, the French method never varied from the type of Nevers, but the eastern chapels were always grouped around a single apse; and the German method only varied from the type of the Apostles' Church in Cologne in the number of apses that were grouped around the choir; or, in other words, the French arrangement of the chapels is always around the semicircle, whereas the Baltic plan is to set its apses, or chapels, against the

whereas the Baltic plan is to set its apses, or chapels, against the sides of a square or an octagon.

At the Dom of Lübeck, of the five chapels round the east end of the choir, those to the north and south open squarely onto the aisles, with the result that the westernmost set of buttresses radiate from the centre of the octagon towards the west, a feature common throughout the Baltic provinces, but, to the best of my belief, found nowhere in France, although, strange to say, existing in Westminster Abbey. I believe the earliest and simplest complete example of this peculiar arrangement of the North German chevet is the Dom of Schwerin, which was building from 1248 to 1327, and contemporary, therefore, with Cologne and Westminster. Its arrangement is perfectly symmetrical; the five chapels are all of the same size, the

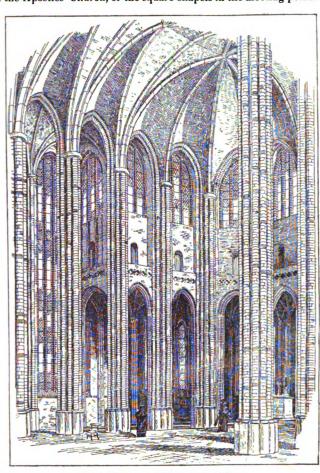


St. Peter's, Malmoe, Sweden.

north and south opening squarely onto the choir, and the western buttresses radiating from the centre of the choir westwards.³ Although the actual connecting links between such a church as

See new edition of Fergusson, ed. by Mr. Phené Spiers, pp. 303-304.
 1320, H. Otte, "Kunst-Archäologie."
 See sketch plan of Schwerin in Essenwein's "Norddeutschlands-Backstein-Architektur."

that of the Apostles' at Cologne and those of Lübeck and Schwerin cannot be pointed out, it is easily seen that there are all the elements of the earlier example contained in the later. The position of the westernmost chapels, or apses, always remains the same with their radiating buttresses, whilst the intermediate chapels between them and the eastern one are merely an enlargement of the turret spaces of the Apostles' Church, or the square chapels in the meeting-points of



Choir and Transept, St. Peter's, Malmoe.

the apses of St. Mary in the Capitol completely developed. arrangement of the chapels of St. Peter, Malmoe, is of the same character, and, with but slight modifications, it became the normal type of the chevet throughout the Baltic provinces.

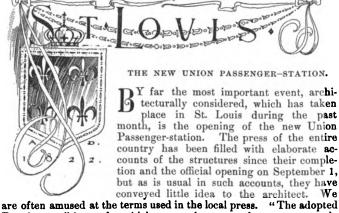
but the chevet throughout the Baltic provinces.

But the chevet never entirely destroyed the triapsidal arrangement, which survived until both were superseded by an altogether different eastern termination of later date. In St. Nicholas's, Anklam, and St. Katherine's, Lübeck, the choir is terminated by three polygonal chapels; while at the Cathedral of Linköping the choir, erected by Germans late in the fourteenth century, is finished with three large polygonal chapels applied to the three sides of the irregular octagonal eastern termination. lar octagonal eastern termination.

One effect of the retention of this triapsidal, or quasi-triapsidal, arrangement was the omission, or reduction to insignificance, of the or the group of five chapels, the transeptal form was forgotten, or only retained to break up the aisle roofs without affecting the groundplan, as at St. Peter's, Malmoe, and St. Mary's, Lübeck. In France or England the chevet never superseded the transepts, and this is but a diditional proof that the France observed the groundplan as at St. Peter's, Malmoe, and St. Mary's, Lübeck. In France or England the chevet never superseded the transepts, and this is or England the chevet never superseded the transepts, and this is but an additional proof that the French chevet grew only out of the apse, independent of the transept, whilst the German was an incorporation of the apse and transepts, which assumed an accidental likeness to the chevet form. Although the transepts were so commonly omitted in many of the churches where the clerestory was preserved, the architecture of the east end was generally more ornate than the rest of the work. This is well seen in the great Church of St. Many Stargard where although the lines of the stringgourses. St. Mary, Stargard, where, although the lines of the string-courses, arcades and groining are kept-throughout, the treatment of the two parts of the church is completely different. A feature in the choir of this church must, if its date be correct, as given by Kugler, early fifteenth century, be due to Southern influence; for, I think, only here and at Milan Cathedral is to be found an arrangement of niches round the great piers under the capitals.

[To be continued.]

THE CASTLE OF CHILLON. - The Castle of Chillon is to be restored, and the Grand Council at Lausanne has sanctioned an appeal to the Canton of Vaud for contributions. Bonivard's dungeon and its "seven columns massy and gray " will be carefully respected. - Exchange.



are often amused at the terms used in the local press. "The adopted Renaissance" is one for which a morning paper has a great weakness. This means about anything. But as to the Union Station, we will begin by stating that this is, undoubtedly, the largest and most costly passenger-station that has ever been built anywhere. The train-shed and head-house occupy in the neighborhood of 496,000 square feet, far in excess of the 338,000 square feet occupied by the Frankfort (Germany) Station, which is next in size. From the fact that the two stations in the United States, next in size to the St. Louis Station, are together but a little over three-fourths as large as the latter, it will readily be understood how immense our new one is. However, we have no desire to delve into statistics, as the above foures are convincing enough and comparisons are useless.

However, we have no desire to delve into statistics, as the above figures are convincing enough and comparisons are useless.

The head-house, containing almost everything belonging to the station except the baggage-room, extends along Market Street from Eighteenth Street to Twentieth Street, and is thus two squares wide. The style of architecture may be called Gothic Renaissance, with the adoption of the round arch in place of the pointed. In this particular case, the style chosen is well adapted because the architect, Mr. Link, has used his tools well. In the first place, Bedford stone is used, and, in consequence, a massive air is given to the building, together with a certain indescribable fitness and beauty. The structure is irregular, the portion at Eighteenth and Market Streets being separated from the middle one by one of smaller dimensions, and the western portion being set back beyond the middle one. Of course a much happier effect is brought about by this arrangement, because in such a building a solid block would convey no adequate idea of the real size of the structure. We must find fault with the tower. It is 267 feet high, but is surmounted by one of the most disappointing cupolas imaginable. Its present appearance gives it an unfinished look, on account of the flatness of the roof. The roof of the building proper is beautifully proportioned, and why the architect did not liken the tower roof to it is rather hard to imagine. We expected a great deal of this tower while in course of erection. The main maiting-room being on the first floor is raised a little above the street-level and entrance to it from the street is gained by two inclined planes, instead of steps, each leading to a large entrance door. One plane approaches from the east to one portal and another from the west to the other. When the planes are on a level with the room they are separated by a balcony for viewing processions and other purposes. Below the balcony on the street level are the entrances to the basement waiting-room, wher

The main waiting-room is a most decided success and by itself redeems any small faults that may be detected here and there in the great undertaking. The prevailing tints are dark-green and gold. The round-arched roof, or, we should more properly say, ceiling, is divided into nine parts by the seven ribs which describe their arcs from the north to the south wall. The panels thus formed between the ribs, and the ribs themselves, are richly decorated in various colors and gold combined. The walls are in light-green and gold, the contrast between them and the ceiling not being as sudden as if any other colors had been used. The wainscoting is in dark-green enamelled Pompeiian brick, laid in alternate courses of the widths and thicknesses of same. On the south, between the ribs of the ceiling, are seven stained-glass windows in yellow. In the afternoon when the sun's rays come through these a quiet, subdued air is given to the room which is entirely in keeping with its prevailing tones. On the north is a kind of a clerestory divided into two stories and seven parts, the latter corresponding to the seven windows above described and seven panels of the ceiling. On the east is another clerestory of two stories in height, and on the west a third similar to that on the east. At the middle of each of these and overlooking the room is a female figure with raised arms. The two clerestories

first mentioned are included in an arch equidistant at all points from the arched roof. At the centre of the latter are three stained-glass skylights, the prevailing color being yellow. The central chandelier is the handsomest in wrought-iron that we have ever seen. Unlike the usual custom adopted in chandeliers of the kind, the lights are not distributed but are concentrated at the lower part of the fabric. We deem this a wise departure under the circumstances, that is, in a passenger-station waiting-room. There are about 250 incandescent lights divided into twelve clusters. The wrought-iron brackets distributed about the room are also very handsome and light up parts of the room which the main chandelier is unable to reach. The floor is laid with mosaic tiles. The seats are of wood, stained darkgreen, and the cushions in heavy dark-green leather. The gold-leaf used in decorating this room cost in the neighborhood of \$10,000, but, thanks to good taste on somebody's part, there is not too much of it.

The ladies' waiting-room is to the east of the main waiting-room. By way of diversion I wish to draw attention to an observation made by an individual recently, which is nothing more than that the first-class waiting-rooms are styled the "Ladies' waiting-room" and "Gentlemen's waiting-room," while the second-class are styled the "Men's waiting-room" and the "Women's waiting-room." This is evidently an intentional distinction and one which the Terminal Railroad Association, owners of the station, should immediately correct. In our opinion, both first and second class waiting-rooms should be called as the second-class are at present. The people passing through a railroad-station are so mixed socially and every other way that there should be no distinction. Perhaps there are excellent reasons for making the distinction, such as, a necessity for dividing the holders of first and second class tickets. The ladies' waiting-room is done in light colors, pink, light-blue, light-green and yellow prevailing. The wainscoting about the room is in cream-colored tiling with a light-blue figured design. The floor is in brown and white marble checkered. A better appearance would have been presented if it were entirely in white marble, or some lighter color than brown used with the white. However, this is comparatively unimportant. There is a very pretty mantel at the east end of the room, made of light colored tiles and brown marble, to correspond with the remainder of the room. Surmounting it is a niche holding a female figure a little less than life-size. The arms are outstretched a short distance from the forehead and the hands embrace a skeleton clock dial and hands. On the north side of the room is a drinking-fountain in onyx and surmounted by a stucco arch against the wall and reaching to the ceiling. There is a similar fountain in the main waiting-room put unlike that just mentioned the prevailing tints are dark-green and gold. Just off from and adjoining the ladies' waiting-room are the ladies' dressing and toilet rooms

To the southwest of the main waiting-room is the gentlemen's waiting-room. Here the prevailing tints are light and dark terracotta grounds, with decorations in various colors. The walls and ceiling are in light terra-cotta, the latter being tastefully ornamented. The wainscoting is dark-brown marble, while the floor is laid in light terra-cotta tiles. The seats are in light wood and have rattan cushions. There is nothing that is especially distinctive about this room, but it has a most inviting and tidy appearance.

room, but it has a most inviting and tidy appearance.

The portal at the northwest corner of the main waiting-room leads to a hallway running to the dining-room. The hallway is one of the most pleasing bits in the entire structure, the ceiling being especially pretty. It is decorated with a Gothic fan moulding in oak, the moulding running into pendentives at five equidistant points. To each of these is hung an opaque colored globe containing incandescent lamps for lighting the room. The effect is very good, the color of the moulding contrasting well with the walls done in Turkeyred. The wainscoting is in dark-green tiles, and the floor is laid in mosaic tiles similar to those in the main waiting-room. On each side of the dining-room door at the end of the hall is a figure in a Gothic niche with uplifting arms meeting and holding a torch.

The dining-room is in oak and light-green. The ceiling is coffered

The dining-room is in oak and light-green. The ceiling is coffered and the panels are painted a light-green color. The wainscoting is about seven feet high, and both it and the coffering of the ceiling are in oak. The walls above the wainscoting are light-green and decorated. There are, too, a number of private dining-rooms, all finished in the same manner.

The lower waiting-room, which is beneath the main waiting-room and below the level of the street, contains ticket-offices, bureaus of information, parcel-rooms and all those dependencies which are usually located in the main waiting-room of other stations. It has been the idea in adopting this arrangement to leave the main room perfectly reposeful and not disturbed by the hurry and bustle which are ordinarily attendant upon such an apartment. The lower room is on a level with the train-shed. From it there are four double doorways leading to the train-shed, which are amply sufficient with the largest crowds. The steps leading to the main room above are divided at a halfway landing into two flights, completing the distance. At the landing are the three entrances leading to the street, on a level with same, and referred to above. Above these entrances are the allegorical figures of St. Louis, New York and San Francisco, spoken of previously. The window and entrances are included in a large decorated arch similar to the "Golden Gate" entrance to the Transportation Building at the World's Columbian Exposition. The prevailing color of the lower room is

The walls are in light cream-colored brick, and the light-yellow. The walls are in light cream-colored brick, and the wainscoting is of enamelled Pompeiian yellow brick laid in alternate courses of widths and thicknesses of same. On the right of the main stairway is the cigar-stand and on the left the news-stand. Lining the east side of the room are six ticket-windows and one window each for the Pullman and Wagner Palace Car Companies. At the centre of south side is a three-sided room containing telegraph and public telephone offices. In the southwest corner is a large soda fountain and candy shop — there are a number of these shops in the fountain and candy shop—there are a number of these shops in the various waiting-rooms in the building. Adjoining this is the branch post-office where all the facilities of a first-class post-office are to be found.

A corridor running along the north side of the building leads to be lunch-counter. This is the most extensive lunch-room we have A corridor running along the north side of the building leads to the lunch-counter. This is the most extensive lunch-room we have yet seen. The counters are in oak and the entire room is suitably finished and decorated in cream-color. Beyond this lunch-room, but entirely separated from it, is the driveway. It is thus under the building and is open to the street through three large arches. Vehicles drive in on the right and out on the left, enabling passengers to alight almost on a level with the train-shed. There is also a driveway coming in under the balcony in the centre of the front. a driveway coming in under the balcony in the centre of the front, described above, passengers being enabled to enter or leave the station by the entrances from the lower room to the street-level. In the subway drive just described, the St. Louis Transfer Company This was has an office for the convenience of the travelling public. a wise move on the part of the station management, although it does create a monopoly for the Transfer Company. The office was found necessary, from the fact that no hack or cab drivers are allowed to

necessary, from the fact that no hack or cab drivers are allowed to solicit business within the station portals, and any one wishing a trap of any kind has but to apply to this office and not undergo the annoyance of the customary yelling of cab and hack drivers.

Extending the width of the entire station and separating the headbuilding from the train-shed is a passageway about thirty feet in width called, and very aptly so, the "Midway Plaisance." The name is a very good one so far as the representatives of all nations are to be seen passing through there, but not when we associate with "Midway Plaisance" all the trash, trumpery, revelry and disorderly conduct which characterized the place of that name at Chicago. The Union Station "Midway" is laid in granitoid and is a most fitting entrance to the great train-shed. At the Eighteenthstreet end, it is below the level of the street. Granite steps lead to the sidewalk. At this point a very handsome Bedford stone porch covers the sidewalk which is divided into three arched entrances. This is known as the Eighteenth-street entrance. At Twentieth covers the sidewalk which is divided into three arched entrances. This is known as the Eighteenth-street entrance. At Twentieth Street, the entrances and exits are of iron and included in one large arch in the west wall. The roof of the "Midway" is iron, and is hung from the south wall of the head-building to the north end of the train-shed. It is above the windows of the various waiting-rooms, so that an unobstructed view can be had of the entire train-shed and "Midway." The gate system has been adopted, that is, passengers are required to show their tickets before passing to the train platforms. This is a departure in St. Louis and has already occasioned a great many disputes, more from the fact that the people are unused to the system than from anything else. At the the people are unused to the system than from anything else. At the centre of the railing dividing the "Midway" from the shed is a small wooden structure, in which are clocks indicating the official railroad-time and where the train-bulletins are marked. Here the operators receive news as to the whereabouts of all trains with St. Louis as a destination and write their knowledge on the bulletin-

The roof of the train-shed covers more square feet of ground in one span than any other in this country and perhaps in the world. It extends the entire width of the station from Eighteenth Street to Twentieth Street. There are six points of support, including those at Eighteenth and Twentieth Streets, thus in a manner dividing the shed into five parts. The shed is amply lighted in the daytime by a shed into five parts. The shed is amply lighted in the daytime by a liberal supply of skylights in the roof and at the ends, also on the Eighteenth-street side. Contrary to the usual custom, the shed does not rest on walls at its outer edges but is left entirely open, a special construction rendering this permissible. This is the case only on the Eighteenth-street side, the baggage-rooms filling in most of the open space on the Twentieth-street side. In consequence of this departure the customary smoke nuisance is avoided and an abundance of light and fresh air supplied. Regarding the smoke nuisance, the Terminal Company has so planned the trackage arrangements that no locomotives are to enter the building. However, this is not strictly adhered to, because we have seen locomotives emit large volumes of smoke under the shed a number of times, emit large volumes of smoke under the shed a number of times, although they do so at the far end only. There are thirty tracks under the shed and room for two more should they be found necessary. This is a larger number than in any other station in the world. We believe Boston comes next with twenty-three tracks in that city's new Union Station. The platforms between the tracks are of ordinary planking, and why not of stone, granitoid, or some other more substantial material than wood, it is difficult to understand. Stone or granitoid would have cost much more, to be sure, but when it is considered that \$6,500,000 have been spent on the project, a few thousand dollars more would not have amounted to much and would have provided platforms in keeping with the rest of the structure. On the Twentieth-street side of the shed are the baggage-rooms. The first floor of this building is used for sending and receiving baggage alone, while the second is occupied by the chief baggagemaster and is used for storage and other purposes. The offices of the Terminal Railroad Association, owners of the Union Station, occupy the upper stories of the head-house together with the Pullman and Wagner Palace Car Companies. The northwestern corner is not yet complete, but will be occupied at an early date by a Terminus Hotel. The hotel will be architecturally in keeping with the rest of the structure, and will be a part of the whole.

It would not be wise to finish this lengthy description without speaking of the admirable trackage arrangements. The majority of the railroads entering St. Louis coming from the East run westwardly up the Mill Creek Valley and those from the West run eastwardly in same. The new station is at right angles to the valley, and thus it is necessary to make a right-angle curve in order to enter the station. Advantage is taken of this by means of a Y track arrangement to back the trains into the shed. The Y is, of course, double-tracked, and where the two branches unite and form the single branch is located the framework with the block signals. Between the two branches is placed the main switch-tower where the numerous levers are energed. From the tower, which faces the shed the entire are operated. From the tower, which faces the shed, the entire arrangement can be seen. After the two branches unite, forming the Y, they again diverge into the thirty tracks entering the trainthe Y, they again diverge into the thirty tracks entering the trainshed. Beneath the switch-tower is the power-house, which is thus far distant from the station, a good thing in case of fire. The electric-lighting and steam-heating plant for the entire structure are here located. There are tracks running beside the house and coal can thus be delivered and the ashes hauled away promptly. Siemens & Halske dynamos are employed for lighting and power purposes, and Babcock & Wilcox boilers fitted with self-feeding furnaces and smoke-consumers. Compressed-air machines are also located in the engine-room to supply compressed air for working the block signal. The latter and, in fact, the whole switching-arrangements, were supplied by the Union Company, of Pittsburgh, Pa.

Four large buildings to the southeast of the station site are occupied by the various express companies. Convenient switches lead up to these on the west side of same, and the wagon-way, laid

lead up to these on the west side of same, and the wagon-way, laid with granite blocks, on the east for the convenience of express and other wagons receiving and delivering packages in the city.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

PALAZZO MUNICIPIO, BRESCIA, ITALY: TWO SHEETS. MEASURED AND DRAWN BY MR. J. WATROUS CASE.

[Issued with the International and Imperial Editions only,]

HERALD BUILDING, BALTIMORE, MD. MR. JOS. EVANS SPERRY, ARCHITECT, BALTIMORE, MD.

COLONIAL WORK IN THE GENESEE VALLEY: THE AYRAULT HOUSE AND FRONT ENTRANCE TO THE COURT-HOUSE, GENESEO, N. Y. MEASURED AND DRAWN BY MR. CLAUDE FAYETTE BRAGDON, ARCHITECT, ROCHESTER, N. Y.

COLONIAL WORK IN THE GENESEE VALLEY: MANTELS AT PITTS-FORD AND GENESEO, N. Y., AND COLONIAL FURNITURE. MEASURED AND DRAWN BY MR. CLAUDE FAYETTE BRAGDON, ARCHITECT, ROCHESTER, N. Y.

[Additional Illustrations in the International Edition.]

THE FINE ARTS BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MR. CHARLES B. ATWOOD, ARCHITECT.

CHAMBER OF DEPUTIES IN THE NEW HOUSES OF PARLIAMENT, BUDAPEST, HUNGARY. E. STEINDL, ARCHITECT.

HOUSE OF LORDS IN THE SAME.

THESE plates are copied from The Builder.

OLD RATH-HAUS, SCHWALENBERG, LIPPE-DETMOLD, GERMANY.

This exceedingly picturesque and admirable specimen of sixteenthcentury timber-framed building in Germany is not only exceptionally rich and refined in its detail, but it is unusually interesting on account of the arcaded treatment of the ground-floor story of its façade, giving the building somewhat of the character of an old market-house. Whether this arcade was originally intended to be open to the street is not quite clear, but probably it was built as it stands. The

Rath-haus occupies a site in the middle of the ancient town, and is surrounded by similar quaint, old half-timber buildings, though none are so rich, of course, in carved ornamentation. The date of 1579 figures in more than one place on the front, and the panel over against the entrance contains a representation of Justice holding the balance. Various inscriptions give enhanced interest to the horizontal timberings, and in a thoroughly characteristic fashion the carved elaborations extend through the joint-lines of the construction, no serious attempt being maintained to observe the restrictions tion, no serious attempt being maintained to observe the restrictions indicated by the framings and interspaces. The panels of the principal gable are finished off in plaster, thus giving increased value to the florid work on the smaller gable and lower stages of the structure, which, as a whole, gains breadth and quaintness by the uninterrupted series of windows along the main story. The spirit of Mediævalism pervades the whole design, which, in many ways, is eminently suggestive for modern use, though, of course, the difficulty of a low pitch to the stories and user troofing spaces over difficulty of a low pitch to the stories, and vast roofing spaces over them, are very real to the architect when dealing with anything like a literal adaptation of the dominating lines of old half-timber buildings to the requirements of contemporary customs and conditions as to cost. This illustration is taken from The Building News.

ROYAL CHAMBER IN THE FORTRESS OF HOHEN - SALZBURG, AUSTRIA.

The greater part of the present castle, whose towers are four hundred feet above the Kapitel-Platz, of Salzburg, dates from 1496 to 1519. This print is copied from Architektonische Rundschau.

CHURCH OF ST. AGATHA, FOR THE WINCHESTER COLLEGE MISSION, PORTSMOUTH, ENG. MR. J. HENRY BALL, A. R. I. B. A., ARCHI-

THE drawing which we reproduce in this issue was exhibited in the Royal Academy Exhibition of the current year. The church is in course of erection in a very poor part of Portsmouth, where the Rev. R. R. Dolling, missionary, has worked for some years. The style adopted is that of the Basilican churches of the Lombard type, which secures uninterrupted view of the altar to a large congrega-tion. The church when completed will seat some 1,250 people. It is proposed at present to complete the nave and south aisle, which will seat about 800, at a cost for the structure of 6,200l, but contracts have been obtained for its completion with all fittings and finishings. The south aisle is arranged as a complete chapel large enough for daily services.

STREET CORNER IN WOKINGHAM, ENG.

The double-page illustration given this week is a reproduction of a sketch exhibited at the Royal Academy this year by Messrs. Charles Smith & Son, architects, Reading.

The building was erected some time since at Wokingham, Berks,

and is constructed with local gray brick facings and red brick dressings and strings. The stonework is of Box ground Bath.



BOSTON, MASS. — Exhibition of the Works of Adolf Menzel; also, Drawings by John Trumbull: at the Museum of Fine Arts, in October and November.

BRIDGEPORT, CONN.—Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery, September 8 to October 27.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.

NEW YORK, N. Y .- Loan Exhibition of Portraits of American Women:

at the National Academy of Design, opens November 1.

Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

PHILADELPHIA, P.A. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

St. Louis, Mo. - Paintings: at the Exposition, closes October 20.



RUSKIN ON LOCOMOTIVES.—The locomotive has been the incentive for a good deal of extraordinary eloquence, but it is thought that it will be difficult to find anything equal to the following quotation from a volume of recently published lectures by Ruskin: "I cannot express the amazed awe, the crushed humility, with which I sometimes watch

a locomotive take its breath at a railway station, and think what work there is in its bars and wheels, and what manner of men they must be who dig brown ironstone out of the ground and forge it into THAT! What assemblage of accurate and mighty faculties in them; more than fleshly power over melting crag and coiling fire, fettered and fluessed at last into the precision of watch-making: Titanian hammer-strokes, beating out of lava these glittering cylinders, and timely respondent valves, and fine-ribbed rods, which touch each other as a serpent writhes in noiseless gliding, and omnipotence of grasp; infinitely complex anatomy of active steel, compared with which the skeleton of a living creature would seem, to a carcless observer, clumsy and vile — a mere anatomy of active steel, compared with which the skeleton of a living creature would seem, to a carcless observer, clumsy and vile—a mere morbid secretion and phosphatous prop of flesh. What would the men who thought out this, who beat it out, who touched it into its polished calm of power, who set it to its appointed task and triumphantly saw it fulfil this task to the utmost of their will, feel or think about this weak hand of mine, timidly leading a little strain of water-color which I cannot manage, into an imperfect shadow of something else—mere failure in every motion, and endless disappointment? What, I repeat, would these iron-dominant genii think of me, and what ought I to think of them?"—American Engineer and R. R. Journal.

LONG EUROPEAN BRIDGES.—The Fordon Bridge over the Vistula River, in Germany, probably ranks sixth among the European bridges, so far as length is concerned, the 12,632-foot bridge over the Danube at Czernavoda coming first, followed by the 10,490-foot bridge over the Tay, the 7,855-foot Forth Bridge, the Waal Bridge in Holland with a length of 4,823 feet, the 4,718-foot bridge over the Volga at Syrsun Russia, and the Fordon Bridge, which is 4,347 feet long. The last has five river spans of 328 feet and thirteen of 203 feet 5 inches each. The river piers are founded on concrete enclosed in piling and protected by five river spans of 328 feet and thirteen of 203 feet 5 inches each. The river piers are founded on concrete enclosed in piling and protected by riprap; the foreshore piers and one abutment are founded on masonry wells, 29½ feet outside diameter, sunk to from 30 to 33 feet below the surface of the ground. The main girders over the river-openings have parabolic upper, and horizontal lower, chords. The width between the main girders in the clear is 35 feet 5 inches, of which 21 feet 4 inches is given up to a roadway, and 13 feet 7 inches to a railway, the remaining 6 inches being occupied by a dividing lattice 8 feet 3 inches high. On each side of the main girders there is a footway, 4 feet 11 inches wide. On one side of the river, both above and below the bridge, there are sheers for removing and replacing the masts of passing vessels, and there is also a towering apparatus for boats passing under the structure.

— Cincinnati Commercial-Gazette.

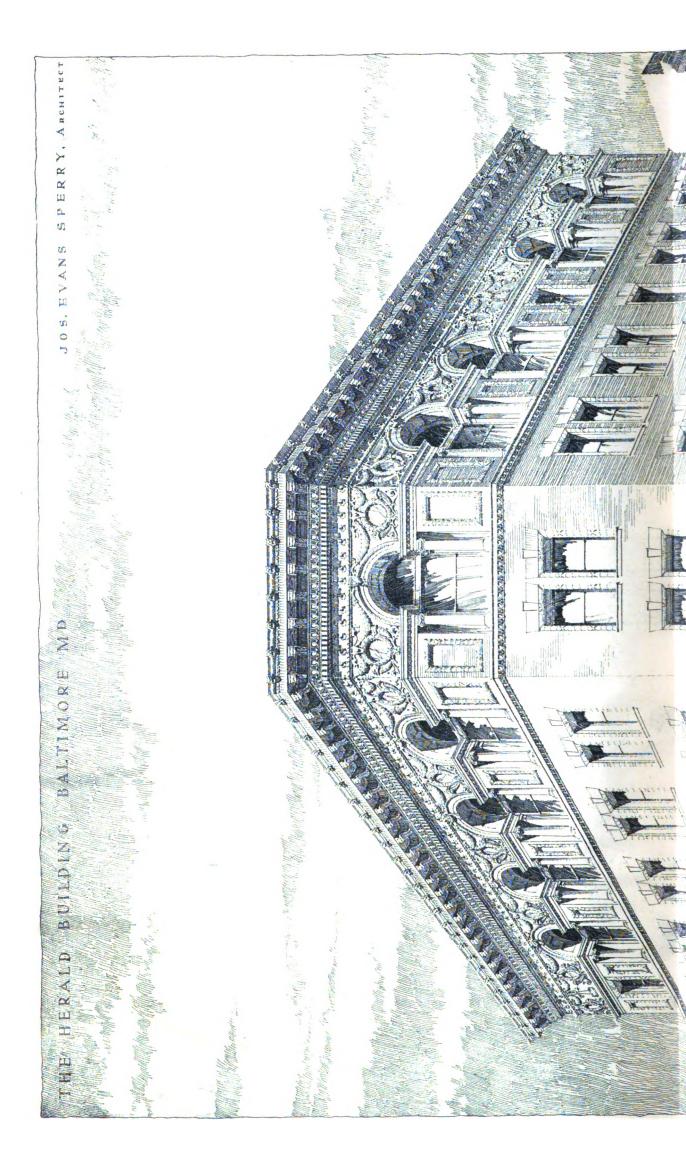
An African Wood harder than Ebony. — Now that the excitement over the alleged invention of "bullet-proof cloth" is flagging, if not practically dead, the reported discovery of a fire and steel proof not practically dead, the reported discovery of a fire and steel proof wood may have a chance of attracting some attention. Several species of iron-wood have long been known and widely used, on account of their extraordinary weight and hardness, in the manufacture of such articles as axles and ploughs. It is claimed, however, that these are entirely surpassed by a certain tree found in the Northern Transvaal, regarding which M. Basiaux, at present travelling in South Africa, has transmitted a note to the Geographical Society of France. The wood is a sort of ebony, and so excessively hard that it cannot be cut in the ordinary manner, except when green. When mature and dry it resists every known tool, and blunts or breaks the finest tempered steel. It is apparently almost impregnable against fire as it required a fortnight's apparently, almost impregnable against fire, as it required a fortnight's constant burning to reduce the trunk of one of the trees to ashes, and, although heavy, it is said to be considerably lighter than steel or iron.

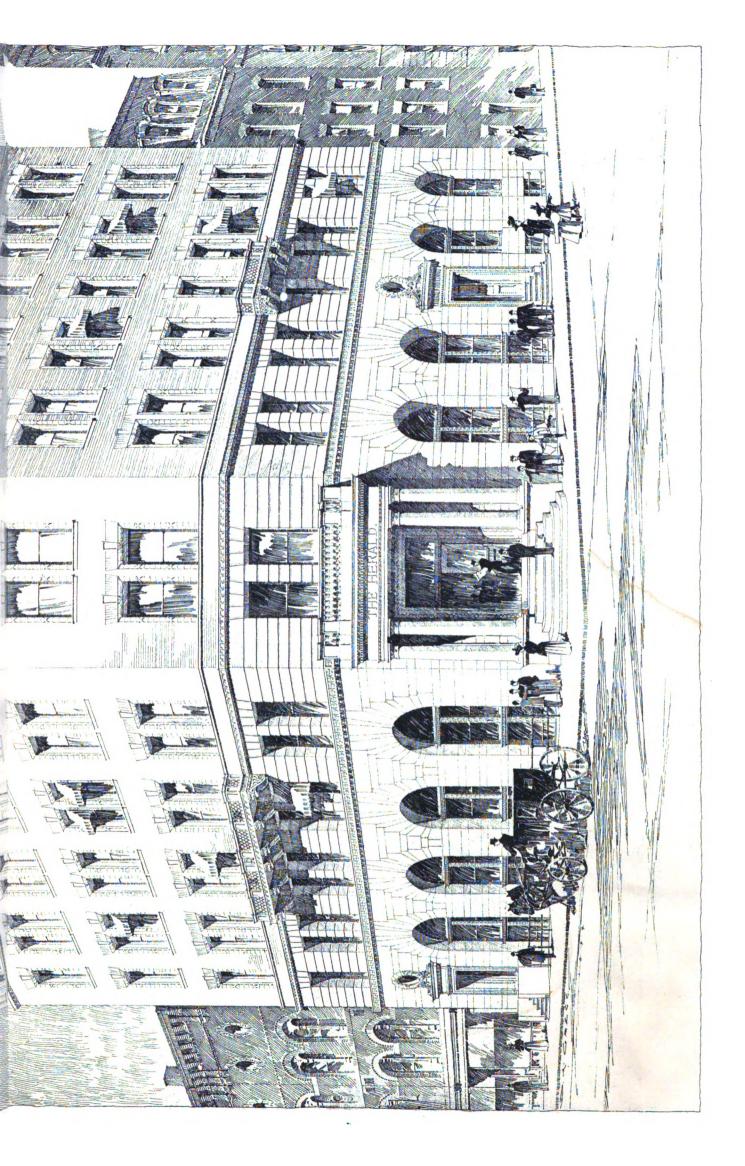
A Dogs' Cemetery.—A correspondent of a London paper writes: "The idea of a dog cemetery is not by any means a new one in this country, as such an enclosure is to be found in one or two garrison towns. There is such a place of sepulture in Edinburgh Castle, in particular, the small space behind the battlements, on the north side of that fortress, just in front of the battery on which stands that huge historic piece of ordnance, Mons Meg. The cemetery is filled with stones erected to the memory of regimental pets, with the names of the corps and dates, the last going well back to the beginning of the present century. The spot, which is not open to the general public, is very much neglected. The castle guides, as a rule, point out this curious dog cemetery to visitors."—Boston Herald. A Dogs' Cemetery. - A correspondent of a London paper writes:

The Chalk Deposits in Nebraska.—The great chalk deposits which have recently been discovered in Nebraska, in the section known as the Niobrara regions, will afford an absorbing theme of discussion to students of geology and mineralogy. Until very recently it was not supposed that there were any extensive chalk beds in this country. This country was dependent for chalk on importations, and every one looked to foreign countries, as a matter of course, for the supply. It was known that one-seventh of the area of Europe was covered with chalk formations, but in this country it was believed that the conditions were entirely different. The recently discovered Niobrara beds, however, are said to contain as perfect deposits of chalk as can be found in the magnificent downs on both sides of the English Channel.—Boston Transcript. - Boston Transcript.

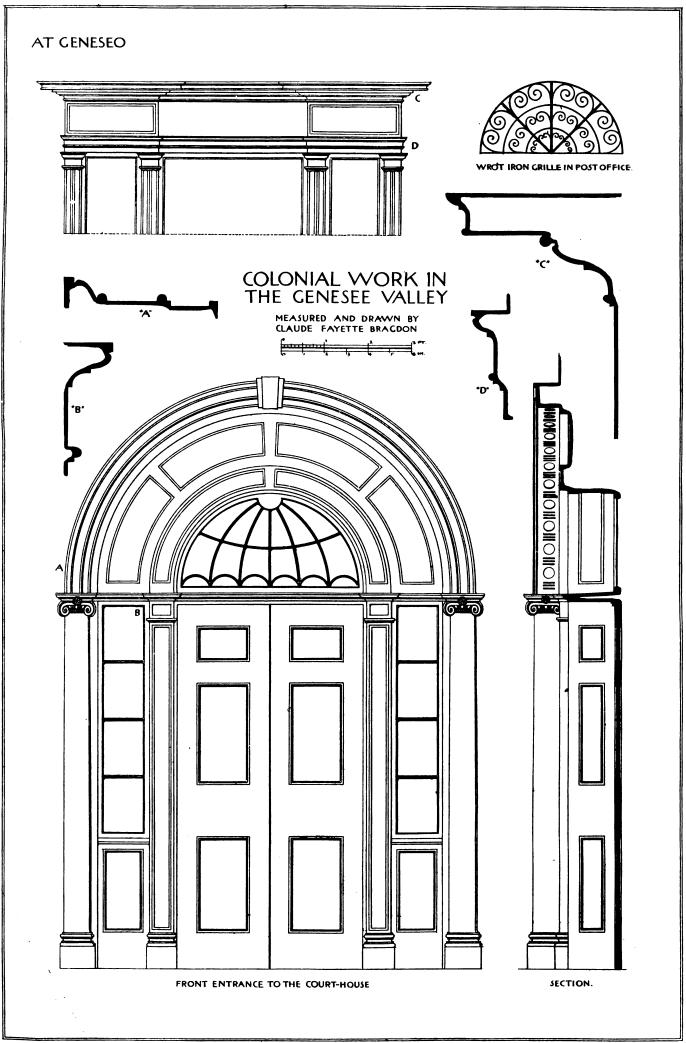
DERIVATION OF THE TERM "SILHOUETTE." - The name silhouette DERIVATION OF THE TERM "SILHOUETTE." — The name silhouette as applied to a black outline picture had its origin in a proper name. Etienne de Silhouette, a famous minister of finance in the last century, undertook to enforce economy in the administration of Government affairs, but the gay nobles ridiculed the idea, and at last one of them, for a jest, had a black outline picture of his face made and showed it to his acquaintances, pretending that Silhouette had made him so poor that he could not afford to have a better portrait. The joke took, and silhouettes became the fashion. — Literary Digest.

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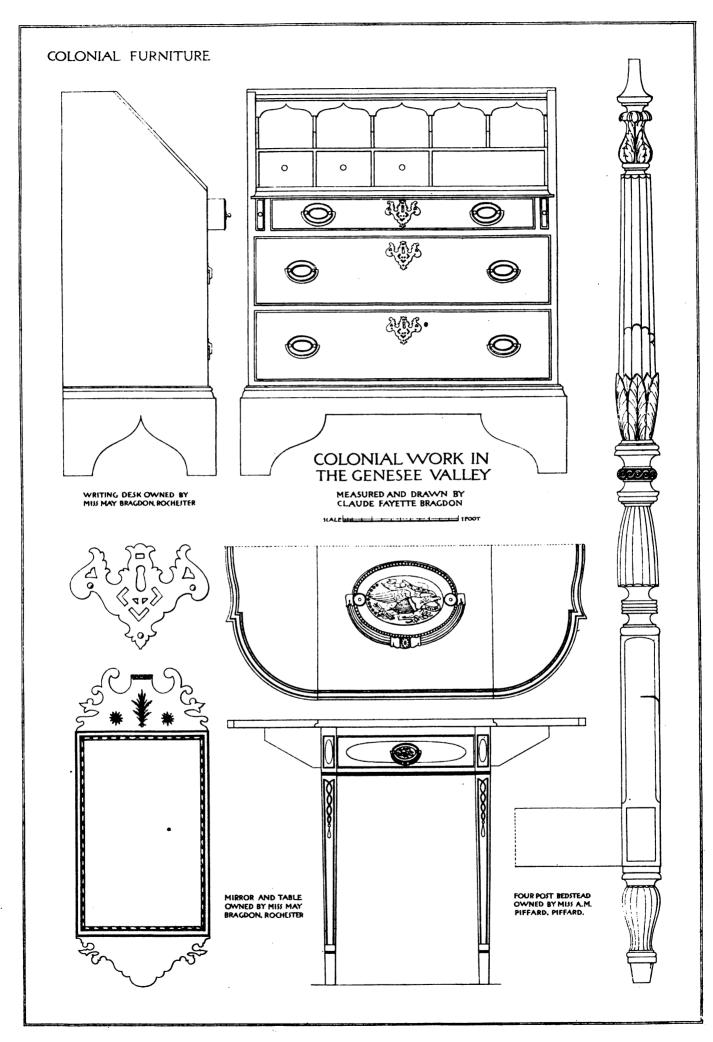
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MELIOTYPE PRIMPING C!, BOSTON

MO. 981. MERICAN ARCHITECT AND BUILDING NEWS, Oct. 13, 1894.



HELIOTYPE PRINTING CO. BOSTON

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OCTOBER 20, 1894.



The Protection given by Mechanics' Lien Laws.—A Simple Form of Lien.—Bores in Architects Offices.— How to Recommend Goods to Architects.—The Death of Professor Rossi.—Ice-Making with Nitrate of Ammonia.—A Patent Privy Vault.

THE TWENTY-EIGHTH ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

SKELETON CONSTRUCTION AND THE FIRE-DEPARTMENT.

THEATRES.—VI.

SOCIETIES.

LLUSTRATIONS:—

The Capitol, Columbus, O.: View from the Southeast.—The New York State Building, World's Columbian Exhibition, Chicago, Ill.—Accepted Design for Bexar County Courthouse, San Antonio, Tex.—House and Stable at Chestnut Hill, Mass.—Taylor Library, Milford, Conn.—House at Rochester, N. Y.

Additional: Dining-room in House at Great Barrington, Mass.—Statue of the Republic, World's Columbian Exhibition, Chicago, Ill.—New Premises, Old Square, Birmingham, Eng.—A Street House.

COMMUNICATION:—

A Question of Ventilation.—Roughcast.—Coloring Plaster Casts.—The Wages of Mechanics in the Last Century.—Wiring for Electric-lighting for Buildings.

EXHIBITIONS.

NE of the most perplexing problems of modern social science is the securing of the wages of poor workingpeople against the effects of the fraud or extravagance of their employers. In the abstract, there is no reason why one class of persons should have their income assured to them more than another class, and there is much to be said in favor of the view that legislation for securing the wages of working-people, in preference to the claims of other creditors, makes the working-people themselves careless and improvident, by relieving them of the necessity for using common prudence in their business affairs. There is, however, a maxim of law, that no prudence can protect a man against fraud; and legislation which, without discriminating against any honest creditors, will make it impossible for a dishonest speculator to raise money for himself, by mortgaging the work which has been done for him by innocent persons, and leave these persons without payment, is certainly proper. Whether the ordinary mechanics' lien laws of our States accomplish this result in the best way is more than doubtful, their effect being, in many cases, to rob honest owners for the benefit of rascally contractors; and it seems as if they might be improved, without much difficulty, by a better discrimination among the parties against whom such liens are to be enforced. In Germany, where frauds are perpetrated upon workmen by speculators, who buy land on credit, and build, piling up mortgage upon mortgage, until they have secured, and disposed of, the whole value of the property, without having paid for the materials or labor which have been put into it, there is a strong feeling in favor of the enactment of mechanics' lien laws, similar to those in force in our States. In support of this idea, a good deal of sophistry is produced in some of the German newspapers in regard to the relation of mortgagees. One man says that, in his opinion, all the claimants against an estate, including mortgagees, material-men and workmen, should, if the estate is sold to satisfy the claim of any one of them, share the proceeds in proportion to their several claims. It is obvious that this curious plan would open the door to all kinds of fraudulent collusion, while the rates of interest charged on mortgage loans subjected to such chances would be so enormously enhanced that building with borrowed money would almost cease. It is argued, not without some show of reason, that, as the erection of a building on a piece of land enhances the value of the estate, the owner of a mortgage on the land, instead of having his security increased by the added value of the building, ought to be still confined to the land for his security, leaving the building free, to be pledged as security,

either for a new loan, or for the claims of the workmen employed on it. The reply to this is that, as the building is attached to the land, the owner of a mortgage on either, separately, would be unable to realize on his security. The holder of a mortgage on the land, if he wished to call in his loan, or the mortgagor stopped paying interest, could not foreclose, and take or deliver possession, without interfering with the rights of the owner or mortgagee of the building; and the mortgagee of the building could not, if it were sold separately from the land, realize the cost of pulling it down. It seems plain that nothing is to be gained by jugglery with mortgage deeds, and the inevitable effect of any attempt to do so would be to raise rates of mortgage interest; but it might be possible to check the practice of mortgaging in advance property not yet in existence. If a man could only mortgage so much of his building as was actually erected, and the workmen were given a simple lien for their wages, this lien, accruing first, would take precedence of the mortgage, and the mortgagee could either pay the money and take up the lien himself, and add it to the amount of his secured debt, just as he would take up a prior mortgage, or a tax-title; or refuse to pay over his money until the lien was discharged. In either case, the workman would be sure of his pay, and this without giving him an unjust preference over other people, or doing anything for him beyond simplifying the procedure for the collection of debts due him, a favor which poor and busy men have a right to ask of the law; while the mortgagee, although it would give him the trouble of ascertaining what liens existed, before he paid over his money, could not complain of being obliged to exercise some prudence in this respect, if the law gave him the means of getting the necessary information about such liens by simple inspection of a record.

HERE work on a building is done for the owner of the land, through a contractor, the case would be the same. Each man's lien accruing as he did his work, the owner would only have to see the receipts for wages, to be sure, when he made the payments under the contract, that no lien existed. As to the manner of recording and giving notice of such liens, experience would be the best guide. Architects often, in the owners' interest, endeavor to ascertain whether the men at work on a building have been regularly paid; but, particularly in a large building, they come and go so that it is difficult to remember their faces, and perhaps the best way would be to have either the owner or the contractor, as might be agreed upon between them, provide a book, in which each man who worked in the building must, at the commencement of his labor, register his name, or forfeit all right to a lien. Every week this book should be balanced, and receipts in full signed by each man opposite his registered name, and his right to a lien for the work of that week should thereupon terminate. The registry book would then be conclusive evidence at all times of the existence of all liens for labor on the building, and could be consulted with confidence by owners and mortgagees. In practice, the men would probably grumble a little at having to take the trouble to write receipts for their wages in the book, but a habit of exactness and punctuality of this sort would be much better for them than the lax practice of working along in uncertainty for a time, and, a month afterwards, going secretly and getting a lawyer, for a fee of half the amount due, to file a lien at some distant record-office. In cases where a man worked only a day or two, instead of completing a week, he would still be obliged to register his name, and the contractor, if he wished to get his payment, or the owner, if he wished to raise his mortgage-money, or to be secure against unsatisfied claims, would still have to get his receipt in the book by taking it to him, if in no other way. The evidence of the book ought to be held as conclusive, in all cases. men are often weak enough to sign receipts for money which has not been paid them, in the vague hope of getting it out of somebody somehow; and they should be taught that their signature binds them, and that they have no right to injure innocent people by their feebleness. Of course, there is a possibility that a contractor, or an owner eager for his mortgage-money, might forge signatures to receipts; but the penalties for forgery are not such as to invite aberrations of this sort, and such forgeries would be small in amount, and easily detected.

BOBABLY the reflection has recurred to a good many architects besides ourselves, that the present season is characterized, so far as building is concerned, by an unusually large crop of patented devices of various kinds, which the inventors, or agents, find it necessary to recommend at great length to architects by means of personal visits. young architect, who has plenty of leisure, as well as inclination, for acquiring practical knowledge, these visits are not always unwelcome; and there is not only instruction, but amusement, in describing each inventor's device to the succeeding visitor, and hearing his comments upon it. To the busy practitioner, however, such interruptions are a serious matter. He may shut himself up in the innermost recesses of his office, fancying himself safe; but the practised and persistent salesman will draw him forth as easily as a fisherman lures a trout from its hiding-place. One well-worn trick is for the visitor, on being requested by the office-boy to send in his card, to say that he has been desired to call. Of course, he is shown in, and the architect, coming out to welcome an expected visitor, is met with the cool explanation that if the intruder had not been actually invited to call, the omission was doubtless inadvertent, and he had taken upon himself to remedy the oversight. An architect must be pretty amiable to bear this sort of deception with equanimity, and it is doubtful whether such advocacy benefits the parties who have goods to sell. There is a notion, very current in the community, that, in order to extend a business, it is necessary to employ salesmen endowed with "push," or, in other words, impudence. This idea, so far as architects are concerned, is a very unfounded one. All architects like to know of new things relating to building, particularly if they are good things; but none of them like to be intruded upon by bores, and few can be imposed upon by the Munchausenisms which may answer for the customers of a cheap auction-room; while many of them are experts in nearly every matter relating to the art of construction. It is folly for a manufacturer to send to such men, as his representative, a glib bore, ignorant of the first principles of mechanical or physical science. Often, the impression made upon architects by the visits of these individuals is such as to prevent them from considering goods, perhaps not without merit, so injudiciously brought to their notice.

If we might offer a suggestion to the people who wish to introduce a new elevator, or steam boiler, or heating system, or electric-lighting machine, or plumbing appliance, to architects, in the hope of having it called for in architects' specifications, we should say that the first thing to be done was to prepare a circular, containing, not an ignorant and untrustworthy description, full of unsupported assertions, but an accurate and intelligent account, showing wherein the new affair differs from those already in use, with which, it must be remembered, architects are sure to be familiar, and giving reasons for its superiority, based on the physical laws familiar to educated men, and not on offers of ridiculous "guarantees, or money refunded," which discredit a good thing, and do very little to help a bad one. These circulars may either be sent, or presented with discretion, to architects. They will go immediately into the waste-basket, in any case, but, if they are written with a real knowledge of the subject, they will be read by a majority of architects before they are tossed away. The next thing is to keep the matter before the profession by some sort of standing advertisement in the professional journals. need not be long. Architects have good memories for what interests them, but they cannot be expected to remember the address of all the people who bring new goods to their notice, particularly as these addresses frequently change. Having provided for all this, the manufacturer or dealer can afford to wait awhile. On an average, it will probably be several months before an architect who has read the circular will have occasion to use the goods; but when he does have such occasion, he wants to know at once where to get them. Perhaps he is writing a specification, in a great hurry, and would like to specify them by name without interrupting the course of his thoughts; or, more often, he will be talking over a building with his client, and wishes to call the latter's attention to what he has reason to think a valuable novelty. In either case he must have the address, corrected to the latest date, directly under his hand, or he will content himself with something else. To put off the matter until the agent, of whose name and address he is totally ignorant, calls again,

or still worse, until he has rummaged through a pile of ten or twelve thousand circulars, supposing him to have accumulated such a treasure, is simply to abandon it altogether, and the inventor or dealer, no matter how eloquently he or his representatives may have expressed himself in his interviews with the architect, or how instructive and costly his circulars or catalogues may have been, loses that sale. If, however, the architect can turn at once to the address he wants, he will write, or refer his client to it, and, if the article in question is really better than old ones of similar sort, the sale is more than likely to be made. After this, it may be many months before the same architect has the question presented to him again, and, when he does, he will need the same facilities for solving it, but, meanwhile, other architects will be going through the same experience, and supposing the thing for sale to be desirable, it is sure to commend itself to them, always provided that they know, at the moment they want it, where to get it.

HE death of so eminent an archæologist as Professor Rossi ought not to pass unnoticed by architects, although the latter are not accustomed to interest themselves very much in the Early Christian period, to which Rossi devoted most of his zeal and skill. Incidentally, however, his investigations among the inscriptions and mosaics of the Catacombs and the early Christian churches have cleared up many a point of architectural importance, and, we hope, have inspired more than one architect with a renewed feeling of reverence and enthusiasm for the Church which we have received from the martyrs who loved it so tenderly, and defended it so well.

SUGGESTION which we find in a late German paper is worth remembering. It seems that Paul Altmann, Berlin, N. W., makes a small ice-machine, about the size of an ice-cream freezer, in which nitrate of ammonia is used as the freezing substance. A cylinder is mounted on pivots, on a stand, so that it can be revolved about an axis perpendicular to its side. In this cylinder is set a smaller one, with a tight cover. The small cylinder is filled with pure water, and set in the large one, and the space between them packed with a mixture of seven pounds of nitrate of soda and three quarts of water. The cover of the outer cylinder is then screwed on, and the whole whirled around for fifteen minutes. If the covers are then taken off, the inner cylinder is found to be full of ice. The water to be frozen should be as cool as possible before putting into the cylinders, as the nitrate of ammonia has a rather limited chilling power, and will not cool water to the freezing-point from a higher temperature than about 60° Fahrenheit. After the operation is complete, the solution of nitrate of soda in the large cylinder is to be poured into a pan, and evaporated to dryness on the kitchen stove, and is then ready to be used again.

RATHER curious patent has been taken out in Gernany, by H. Nolte, a carpenter, of Bochum, for an arrangement of vaults and privies, which might be found useful for country cottages. Herr Nolte builds an ordinary vault, which, it is needless to say, ought to be of brick, cemented tight. An open iron stand, in the middle, supports a large iron pipe, which ends under the seat above. Naturally, the vault gradually fills, but as soon as the semi-liquid mass rises to the level of the bottom of the pipe, the orifice is trapped, and, instead of the whole effluvium of the contents of the vault escaping through the seat, nothing rises through the pipe except the emanations of the comparatively small quantity contained in it, and these, as the editor of the Bautechnische Zeitschrift observes, can be kept down by pouring in a pint or so of If the vault has a tight cover, with a ventilation-pipe carried to a harmless outlet, and an inlet for fresh air, the gases generated will not force their way into the house, and it is said that the undisturbed surface of the general mass in the vault becomes covered with a crust, so that few vapors rise from it. We cannot say that we regard this as altogether a nice arrangement, and a provision for an earth-closet, or for galvanized iron pans, on wheels, the contents of which should be removed to the garden every morning, would be infinitely preferable; but it is at least better than the horrors of most country privies.

TWENTY-EIGHTH ANNUAL CONVENTION OF AMERICAN INSTITUTE OF ARCHITECTS. THE

THE FIRST DAY'S SESSION.

PPARENTLY the three or four score architects who assembled in the rooms of the Architectural League felt that this, the Twenty-eighth Annual Convention of the American Institute of Architects, was to be an interesting and important occasion, for every one looked cheerful and animated — which is not always the case at these meetings — and so kept in harmony with the bright and bracing character of the day.

Mr. Burnham's opening address was simple, straightforward, and

at times forceful, and such recommendations as he did make all would be willing to see carried out.

The report of the Board of Directors was mainly historical, and con-

tained no recommendations of any material value, and recounted no

The report of the Committee on Education, prepared and read by Mr. Van Brunt, was a notable contribution, taken from a literary standpoint, and was listened to by all with close attention and welcomed with applause. Mr. Van Brunt frankly said that one of his fellow committeemen had said the report might properly be prepared but he for one would not like to true to carry it out. And sented, but he, for one, would not like to try to carry it out. And this seemed to be the feeling of those who had listened so carefully to its reading, and particularly of Mr. Post, who, partly misunderstanding the motion of Mr. Yost, objected to the report being officially brought to the notice of the conductors of the several architectural schools with the recommendation that the scheme outlined

should be put into working shape and adopted.

Mr. Van Brunt goes too fast and too far in his suggestion. It is not logical to assume that schoolboys can, at the opening of their careers, understand the philosophical and ethical considerations which now so much interest the reporter after many years of study and applied practice. What the boys must be taught in school, aside from the mere matter of technical dexterity, is the real meaning of distribution of plan and mass, balance, proportion, the values of parts and their relation to the whole. In teaching these, the architectural schools do their full and their best duty, and it is a teaching that can hardly be done anywhere else than in schools. Incidentally, as it were, the pupils learn the history of art, the properties of the several styles, and so on, so that they can, in a large measure, apply later to work done in such style as they may elect to practise in those lessons in proportions, values, and so on, which they learned to consider in the abstract at the time when they were being taught them in their practice-work on Classic architecture, which

taught them in their practice-work on Classic architecture, which better than any other is suited to the needs of instructor and pupil.

Every parent wishes it were possible for his son to begin his life at about the degree of attainment and education he himself has reached, but he realizes that human life is so directed that each entity has to waste a large part of its working energy in doing to-day just the same thing that human beings have been doing for eons. Yet each generation, thanks to the forethought and guidance of its predecessor, succeeds in getting a grip on life and its activities a little earlier and a little higher up. Such progress as this ought to be held satisfactory, except by the most resolute of dreamers.

be held satisfactory, except by the most resolute of dreamers.

Mr. Upjohn's report for the Committee on the Preservation of Public and Historic Buildings was extremely local in its tenor and entirely blinked the possibility of making a recommendation that would draw public attention, and, perhaps, secure some fruition. He devoted himself entirely to stating that the Custom-house, on Wall Street, had been offered for sale and that it was regrettable that a building of that character should be torn down, whereas it offered such excellent opportunities for adornment with memorial busts, statues, panels, etc., in honor of those men of worth whom the Government ought to commemorate in enduring form. Incidentally, he suggested that the name of Isaiah Rogers, as architect of dentally, he suggested that the name of Isaiah Rogers, as architect of the building, ought to be inscribed on it—a rather fleeting immortality if the building is to be destroyed. He also recounted that an attempt had been made to cause the Secretary of the Treasury to direct the removal of the name of Frazee, as architect, from the Sub-Treasury Building on Wall Street, and the substitution for it of the name of the real designer, William Ross.

If our recollection serves us rightly, just this report was submitted at the Convention held at Washington four years ago. One would think that the fact that nearly all the members of the Cabinet and their wives travelled to Batavia last week to attend the dedication of the old land-office of Holland Purchase, as a memorial to Robert Morris, might have indicated to this Committee that there

Robert Morris, might have indicated to this Committee that there were a good many buildings besides the two on Wall Street that are worthy of their attention and that the Government is not unwilling to listen to representations which will cause their retention and

preservation.

The Afternoon Session was wholly given up to discussing the

matter of a number of amendments to the By-laws.

The most important of the amendments bore on the connection between the Institute and its Chapters; in fact, related to the very life and marrow of the association, and yet the discussion and debate was so managed that practically only one side of the question was presented. In a manner it was a question of the Ins and the Outs, in which the Ins legislated for the Outs without giving the latter a fair hearing. The debate resulted in the adoption, without practical change, of the amendments as printed in one of our recent issues, so

that henceforward, an architect in order to become a member of the Institute must first join one of its Chapters, and more than this, "every practising member of a Chapter" must become a member of the Institute.

We question whether there are not certain bodies now Chapters of the Institute, which will prefer to surrender their Charters rather than endure this dictation. For instance, in the Boston Society of than endure this dictation. For instance, in the Boston Society of Architects which, after an existence of some years, accepted a Chapter Charter while maintaining its own independent organization, the voting strength lies with the Society members who are not members of the Institute, and it is very questionable whether this majority will allow itself to be dragooned into joining the Institute against its will with the exaction of double dues. It is quite within the bounds of possibility, that they will vote to abandon the Chapter Charter and then what will be the status of those, now members of the Institute, who cannot remain members of that body if they be not, first, members of a Chapter?

It is possible, too, that the new ruling may lead to trickery. An architect desiring to join the Institute, but being willing to pay dues only to that body, finding that his desire cannot be satisfied unless he first join a Chapter, will possibly accept the condition and join one, but his election to the Institute once secured, he will thereupon resign from the Chapter and cleave only to the Institute, and in this simple way completely nullify the object of the framers of

this mistaken regulation.

It is the more remarkable that the Convention should have accepted this amendment so easily, and, moreover, should have been in a manner guided to accept it by Mr. Burnham's rulings, considering the fact, that at one point of the discussion he found it desirable to leave the chair in order to warn the Convention that it should be very careful not to take any entire that would give it should be very careful not to take any action that would give warrant for the accusation that the Institute is a trade-union and not a deliberative professional body.

The programme for the evening was thrown into confusion, because of the want of foresight of the manipulator of the stere-opticon needed to illustrate Mr. Fox's paper on "Greek Detail," for at the last moment he discovered he could not procure the needed

supply of gas.

However, Mr. Sturgis read his paper on "Modern Style founded on Ancient Greek Architecture," upon which Messrs. Van Brunt and Andrews made some enjoyable comments.

To fill the time assigned to Mr. Fox's postponed lecture, Mr. Jenney gave a brief abstract, from memory, of the paper he had prepared for delivery at a later session, and Mr. Yost read a paper on the "Evolution of American Architecture."

THE SECOND DAY'S SESSION.

There are few things more laughable than to observe how a deliberative assembly, unused to sitting, is terrorized by the unuttered sound of its own thoughts. Yesterday the reporting committees had it pretty much their own way, with only occasional dispute, while to-day they were even more fortunate. Not that the dispute, while to-day they were even more fortunate. Not that the reporters did not give every one a fair chance to refute their views, but a "dumb devil" seemed to have possession of practically all who were not members of the Committee. This condition was all the more remarkable, because Mr. Post, the Chairman of the Committee on a Code for Competition, whose report practically opened the morning session, announced that in answer to its circular inviting suggestions, the Committee had received a great many replies embodying a greater number of varying and irreconcilable suggestions. Yet when the opportunity was offered, the writers of these replies, some of whom were doubtless present, had nothing to say in replies, some of whom were doubtless present, had nothing to say in

This report on competitions, a very important one, as it recommended radical changes, was considered section by section and adopted, practically without debate, and was then referred back to the Committee that its articles might be arranged in more logical. the Committee that its articles might be arranged in more logical sequence and slight changes made in its phraseology. But we are not clear whether it is to be later resubmitted to the Institute for final adoption, or whether it is to be issued to members forthwith and held to be at once in force. Neither is it quite clear whether this "code" is to be considered mandatory or simply recommendatory. If it is to be held mandatory, no penalty is provided for breach of its observance; while if it is merely recommendatory, it is not very obvious what will happen in case some are willing to observe its articles in a given case, while others are not, the third observe its articles in a given case, while others are not, the third party to the question, the prospective client, being wholly oblivious to or refusing to acknowledge the existence of the code and its stipulations.

Of the several important recommendations, perhaps the most important is one which has a bearing on the compensation for designs portant is one which has a bearing on the compensation for designs submitted in limited competitions, and this is so closely connected with the schedule of charges that the old rate of one per cent for preliminary studies, as it has long stood in the schedule, is to be abandoned in favor of the rate established in the proposed code. How this new rate will be actually stated in the schedule, whether or not the tabulation figured out by Mr. Carrère will be given in full, we do not know; but the new rate for preliminary studies and for competitive studies in limited competition is arrived at by a computation which gives, as a result, what is practically two-and-a-half times the square-root of the estimated or intended cost of the pro-

posed building.

Although Mr. Post gave warning that this question was one whose determination would tend to indicate whether the Institute desired to encourage or to discourage competition, and though Mr. Carrère showed that under the present schedule the charge for preliminary work on a million-dollar building would be \$10,000, while by the proposed code the recompense to an individual competitor would be but \$500 in certain cases, yet even then no one cared to debate the question.

Another radical change is in the exclusion of perspective drawings from those which, under the code recommended, are hereafter to be submitted in the limited competitions for public and semi-public buildings. This will be ill news to a large class of artist-draughtsmen who have devoted years to acquiring skill in this special field of men who have devoted years to acquiring skill in this special field of work and who have, in consequence, in a measure unfitted themselves for winning as fair a livelihood in any other way. The ostensible reason for the proposed change is that there is much trickery used in the making of perspective drawings and that a "catchy" perspective — which often would not stand the test of being translated back into elevation —did more to win a competition than did the merits of the plan, which, of course, is really of the first importance. It was said that the competitor who was so lucky as to secure the service of Hughson Hawley usually won the competition. Of course there is a certain reasonableness in this, but as the code proposes to allow a competitor to render his elevation in any medium he prefers, there will be just as much chance for a catchy rendering by Hughson Hawley to carry off the prize. Moreover, it is questionable whether it will be easy to induce the intending client, the holder of the competition, to forego his right to have the work which he is to pay for presented to him in a way by which he can understand fairly what it is really to be. This may not be of very material importance, since the code seeks to compel in every case the absolute awarding of the work to some one of the competing architects on the award of an expert adviser or a commission of three architects.

It seemed to us that from beginning to end the code had been prepared without giving due regard to the rights of the party who is to pay the scot. In fact, it was rather cynically remarked by some one, that if a client who had held a limited competition found as the result that he was bound to erect a building which did not meet his expectations and desires, he had no one but himself to thank for his disgust, since he should have taken care to invite as competitors

only men whom he knew would satisfy him!

After this report and one or two other unimportant ones were disposed of, Mr. L. H. Sullivan read a very Ruskinesque paper on "Emotional Architecture as compared with Classical," during which he took occasion not only to point the finger of scorn at modern civilization, but also to say some very unkind things about education, a word which he found to be the most "pathetic" in the language. While the reprehension he held for educators was catholic and general, it was even a little more specific in the case of those educators who had to do with our architectural schools.

This following on the heads of Mr. Van Paule's report of the design of the design of the design of the language.

This following on the heels of Mr. Van Brunt's report of the day before, looked as if an assault was being made on the several architectural schools in the country, and consequently no one was surprised that, when Professor Ware took the floor to read Mr. Longfellow's careful paper on "Early Italian Church Architecture," he should make a brief reference to the remarks of each of these gentle-He regretted that before making their strictures they had not investigated to discover how far the recommendations they made were already forestalled by the method of instruction now followed. Speaking for Columbia College, he said that so far as he could comprehend the situation, the essentials of the recommendations of both of these gentlemen were already there in practice. Architecture was not there taught as mere book learning, but as a broad and ever-Architecture was not there taught as mere book learning, but as a broad and everexpanding subject and it was the constant endeavor of the instructors
to cultivate and expand the mental faculties and artistic appreciativeness of the pupils in all possible directions.

Mr. Longfellow's paper was followed by one by Mr. Cummings on
a kindred topic, "The Barbarians in Italy," a fragment, he explained,
of a more comprehensive study, upon which he was at work.

The papers of Mr. Day and Mr. Gibson on travelling for architectural study were extremely interesting. Mr. Day's being years extremely

tectural study were extremely interesting, Mr. Day's being very suggestive and Mr. Gibson's practical and to the point. Mr. Blackall alone offered some remarks, drawn from his own experience as a travelling-scholar.

TWENTY-EIGHTH ANNUAL REPORT OF THE BOARD OF DIRECTORS, A. I. A.¹

The Twenty-seventh Annual Convention, which was held in Chicago in July and the opening-days of August, 1893, in connection with the World's Congress of Architects, will long be remembered by those who were so fortunate as to attend it and to share in the enjoyment of that unrivalled display of architecture which housed the World's Columbian Exposition. The generous hospitality of the Illinois Chapter, the fine drive which was given to the visitors for the purpose of showing the interesting streets, parks, boulevards and architecture of Chicago, and the sail on the Lake, ending with the enchanting view of the illuminated White City and

the display of fireworks, are among the choicest memories of one's

In the fifteen months which have intervened, there has been much to engross the attention and tax the energies of your Directors, a short resume of which is herewith submitted.

Mr. A. Page Brown, of San Francisco, was elected by the Institute as a Director for three years, the Nominating Committee having put his name on the printed ballot without ascertaining that he was not a Fellow of the Institute. The Board of Directors therefore declared Mr. Robert Stead, of Washington, D. C., to be elected, he having received the next highest number of votes cast.

The first matrices of the Directors which companied the days were

The first meeting of the Directors, which occupied two days, was marked by a very full attendance, and at that meeting the Buffalo Chapter officially called the attention of the Board to the design of the proposed Buffalo Federal Building and re-opened the question of entrusting the designing of the Government buildings to the office of the Supervising Architect, or of opening them to a properly devised and equitable competition. The details of the contest and the merits of the case have been so fully discussed in the correspondence of the President and the Board of Directors with the Secretary of the Treasury and the Supervising Architect, in the admirable paper prepared by Mr. Glenn Brown, a Fellow of the Institute, and in the discussions of the architectural journals and the press of the country, that it is not necessary to repears the story, but simply to country, that it is not necessary to rehearse the story, but simply to state that the so-called McKaig Bill, which will, if passed, bring about the desired reform, has been reported upon favorably by the House Committee on Public Buildings and Grounds, and is now on the Calendar in the House and with every prospect of its passage in both the House and the Senate, and if passed will probably receive the signature of the President.

the signature of the President.

The Board of Directors wish to thank the special committee of architects, Messrs. Bruce Price, John M. Carrère and E. H. Kendall, who have had this matter especially in charge in Washington, for their untiring exertions and successful work, and also the whole body of the profession, both in and out of the Institute, for the interest created in the subject through the local press and for the promise of support which has been obtained by the personal appeal to Senators and members of Congress by individual members of the

Before the expiration of the Fifty-third Congress we hope to be

Before the expiration of the Fifty-third Congress we hope to be able to congratulate you upon the passage of the McKaig Bill.

At the first meeting of the Board, a Committee consisting of Messrs. Kendall, R. W. Gibson, E. A. Kent, J. W. McLaughlin and W. L. B. Jenney, was appointed to consider the relations of the Chapters to the Institute, which Committee will make its own report, and together with a Committee appointed at the last annual Convention, Messrs. Ferry, Illsley and Gibson, have sent to the Secretary a long list of proposed amendments to the By-laws which, in accordance with existing By-laws, have been sent to each Fellow

of the Institute more than thirty days before the date of this Convention and will be properly before it for action at this time.

The death of Mr. W. W. Carlin, of Buffalo, caused a vacancy in the Board of Directors for one year, and Mr. A. Page Brown, who had been elected a Fellow, was appointed by the Board of Directors

to fill the vacancy.

The Directors have requested the President and Secretary to issue Charters to three new Chapters, namely:

On July 27, to the Southern California Chapter of the American

Institute of Architects, with twenty-two members.
On August 1, to the Washington State Chapter of the American

Institute of Architects, with twenty-three members.

On August 10, to the Brooklyn Chapter of the American Institute

of Architects, with fourteen members.

There have been three letter-ballots issued during the year.

Thirty-two Fellows have been elected and five have been rejected. A letter-ballot will be issued upon the adjournment of this Convention containing eight names.

There have been ten deaths since the last annual Convention, the largest number, we think, in any one year since the organization of the Chapters, and three resignations.

There were 475 Fellows at the last Convention and there are now

the same number as at the last report.

In addition to the statistics given above, the Secretary finds that there are twenty-six Chapters of the Institute with an aggregate membership, not including Honorary and Corresponding Members, of about 600.

Mr. William Pitt Preble Longfellow, elected nearly thirty years

ago a Fellow of the Institute, has, by giving up the practice of the profession, ceased to be a Fellow, but through the work which he has done in writing a dictionary of architecture, and in much other architectural literary work, has kept closely in touch with the pro-

architectural literary work, has kept closely in touch with the profession. The Board, therefore, takes especial pleasure in proposing him for election as an Honorary Member of the Institute.

The Board also proposes the election of Prof. Charles H. Moore, of Harvard College, John S. Billings, M. D., of the Johns Hopkins University, Baron Henry von Geymüller, and Prof. Cady Staley, President Case School Applied Sciences, for election as Honorary

Mr. S. M. Randolph, who was admitted to the Western Association of Architects in 1884, and has been a Fellow of the Institute since the consolidation in 1889, has resigned because of entering other business, which is, however, closely connected with the profession,

¹ Submitted to the Convention at its first session, Oct. 15, 1894.

and therefore, and also because of his honorable practice while in the profession, they recommend him for election as a Corresponding

The Board also recommends for election as Corresponding Member, Mr. J. S. Walker, of Apia, Samoa, an architect and engineer who is accredited to us by undoubted authority, and who feels more closely connected with this country than with any other, and is closely connected with this country than with any other, and is desirous of joining with us as closely as our Constitution and Bylaws will permit. It also proposes Prof. Edward S. Morse, of Salem, Mass., the writer of the work on Japanese architecture, as a Corresponding Member, and William Paul Gerhard, Sanitary Engineer, of New York, Montgomery Schuyler, so well known as a writer on architectural subjects, and Charles MacDonald, the eminent engineer, both of New York.

Since the last annual Convention, the death-roll has been unusually have and death has taken from us some of our most valuable Fallows:

large, and death has taken from us some of our most valuable Fellows:

J. B. Johnston died on the 20th of September, 1893, at Ogdensburg, Vt., aged 52 years.

Alpheus C. Morse died on the 25th of November, 1893, at Provi-

dence, R. I., aged 75 years.
P. W. Ruehle died on the 1st day of December at Chicago.
Geo. H. Edbrooke died on the 25th of January, 1894.

Geo. Walter da Cunha died on the 31st of January, 1894, at New-

August Bauer died February 8, 1894, at Chicago. William Worth Carlin died on the 23d of March, 1894, at Buffalo, N. Y., aged 43 years.

William Henri Adams, Chicago, died May 3d, 1894. Arthur Rotch died on the 15th day of August, 1894, at Beverly,

Mass., aged 44 years.

The Secretary has just learned of the death of James Douglass, of Milwaukee, Wis., but cannot give the date.

Mr. Carlin was a member of the Board of Directors, and the vacancy caused by his decease was filled by the election of Mr. A. Page Brown, of San Francisco, who had received enough ballots at Chicago to elect him a director, but he was found at that time to be ineligible.

Mr. Arthur Rotch has done so much for the profession by his own work in this, his native country, and during a long residence in France; by the establishment, in connection with other members of his family, of a Travelling-Scholarship, and by numerous gifts during his life, and munificent benefactions by legacy upon his decease, that his name will be perpetuated in after years by these great and personal benefits to generations yet unborn.

In our list of Honorary Members, we have for many years been permitted to print the name of César Daly, who died in Paris, January 12, 1894. Distinguished as the author of "L'Architecture Privée" and other serials, a voluminous writer, a beautiful draughtsman and accomplished designer, his reputation was enduring and his fame world wide. By order of the Board of Directors, Messrs. R. M. Hunt and the Secretary were directed to prepare a proper minute for the records of the Institute, and to send a copy of the same to the family of the deceased, which was duly attended to.

John Baird, also an Honorary Member, died in Philadelphia,

Pa., February 13, 1894, aged 72 years.

The Secretary has learned that Mr. S. A. Cook, of Tacoma, Wash., died in that city on the 27th of April, 1893, leaving at that time but one Fellow of the Institute — Mr. G. W. Bullard — in

the State of Washington.

The Report of the Proceedings of the Twenty-seventh Annual Convention and the publication of the papers read before the World's Congress of Architects was so voluminous, and the authors of the papers were so wide-spread, that there was a mortifying but necessary delay in its publication, but it is hoped that the value of the papers which it contains will compensate for the tardiness of their papers which it contains will composite to the state of the same and the Board desires to take this method to thank the authors of the several papers for their kindness in preparing them. A large edition was printed and the Secretary desires to announce that copies can be obtained from him if desired. It is especially desired that they should be placed in Public Libraries, and Fellows can

render a service to the Treasury of the Institute, as well as to their local libraries, by purchasing copies to be forwarded to them.

The Board is impressed with the growing demand upon the profession on the part of committees representing State, County, muression on the part of committees representing State, County, municipal, or other public and corporate bodies, to exact bonds for the completion of public buildings within stipulated amounts. This demand should be resisted as humiliating and unprofessional and fraught with great danger, shifting as it does the best energies of an architect from producing artistic work and conscientiously serving his client to the best of his ability, to a constant study as to how he can manage to manipulate the work so as to be sure that its cost does not exceed the agreed sum without betraying in the work the evidence of the shaving to which it has been subjected. It is suggested that steps be taken to secure the cooperation of the American Society of Civil Engineers to resist the insidious growth of a practice which, if allowed to go on unshackled, will become so thoroughly

retrenched that it cannot be shaken off.

The decision in the case of Rotch & Tilden vs. Fry shows the great value of carrying cases of attempts of infringements of the rights of architects into Court and procuring decisions which will, as precedents, determine authoritatively the rights of architect and client, and great credit is due to them for persistently pursuing

the case to a conclusion — and to a conclusion as just as it is important — but it is not often that an architect is able to bear the great expense of carrying a contest to a final decision, especially against a wealthy client who is determined to resort to all of the delays and appeals which a successful counsellor can manage to obtain; it, therefore, seems fitting that some action should be taken to revive an effort that was made by the Western Association of Architects, be-

fore the consolidation, to form a protective league for the purpose of advising and, if necessary, prosecuting cases which may arise.

Renewed efforts have been made to secure for the daughters of the late President Thomas U. Walter, LL. D., the just compensation for professional services performed so fully and faithfully for the United States Covenment with such connectance and authorized United States Government with such earnestness and enthusiasm that he thought little of himself or of the reward which was his true desert. In consequence, he died poor, and those dependent upon him have been for many years trying to secure a part of that which he ought to have received. It is hoped that the present Congress will pass the bill before it expires.

Arrangements have been made and Committee appointed to secure data for a history of the Institute, and Mr. Bloor, for so many years the Secretary of the Institute, has been retained for that purpose.

REPORT OF THE COMMITTEE ON EDUCATION, A. I. A.1

III HE Committee on Education, on account of the wide separation of its members, has found it impracticable, either in person or by correspondence, to consult together with that freedom which is demanded by the increasing importance and difficulty of the subject committed to them. But the present condition and future prospects of architecture seem at this moment to be so peculiarly dependent upon the character of the training in the professional schools of the country that your Committee venture to present for your consideration a brief and necessarily unstudied statement of the prehistory with an investigation with the prescription. the architectural situation, with an inquiry as to the possibility of improving it through a modification of our educational methods.

This statement is made, not with the expectation of revealing any

new thing, but rather to formulate in a more or less definite way a condition of things, which, without such formulation, is apt to remain without any clear recognition; and the suggestion for improvement is offered, less with the expectation of laying before you a practical scheme for reform, than of stimulating inquiry and awakening

discussion.

We consider that the present condition of architecture in this country as a fine art, though there are clear indications of a late advance in academic scholarships and in technique generally, is unsatisfactory, because in this advance there cannot be detected any unsatisfactory, because in this advance there cannot be detected any healthy progressive principle. In fact, it is rather a progress of personal enterprise and skill than of principles, and does not seem to promise any large or characteristically national fulfilment. It is made on irregular skirmishing lines, not without evidence of individual gallantry here and there, but with none of that effective unity of effort, which is the only means of achieving results adequate and proper to our especial civilization.

As architecture is now for the first time in the hands of men of education it becomes very important indeed for us to consider

education, it becomes very important indeed for us to consider whether this education cannot be such as to inculcate convictions, to make our young architects the agents of a far more definite and orderly progress, and to inspire them with a certain definite consciousness of duty in respect to the development of a system of architectural forms, less conventional in character, and more accurately

But it is said, "Let us be content to do our duty to our art and to our clients, each one to the best of his ability and according to his best lights, and let the style of our time take care of itself, as the styles of former ages and peoples have been created. For these historical styles have developed themselves out of the political, religious, commercial, ethnological, and social conditions, and technique has varied with variations in materials and methods. Why should we attempt to interfere with this natural automatic process of evolution?

In answer to this question is involved a statement of the difference in the conditions of practice in ancient and modern times. But it seems hardly necessary to repeat this statement before such an audience as this, and to say again that our past is a far larger region, a far greater inheritance than belonged to any of our predecessors, and that our minds are preoccupied and our ideas complicated by an infinite variety of architectural monuments.

The progress of investigation in archæology has made us familiar with the buildings and arts of every age and race; we have classified and defined the styles; we have theorized infinitely and created a science of æsthetics. We can, therefore, no longer be, like our predecessors, unconscious ministers in the development of style. As our resources have been infinitely expanded, our personal responsibilities to our art have become far greater and our task far more difficult. Architecture has thus necessarily become a learned profession and we cannot do our duty without academies, libraries and museums and a large equipment of photographs and prints. chitects of the great historical eras, dealing with comparatively simple problems and with only one set of forms at a time, were enabled to concentrate their forces, to develop style without affectations and

¹ Submitted at the first session of the Twenty-eighth Annual Convention, A. I. A., Oct. 15, 1894.



with infinitely less consciousness of effort than ourselves, who are distracted by our knowledge and perplexed by our exacting reminis-cences. These conditions have introduced a new element into the practice of architecture, an element of self-consciousness, of dilettanteism and imitation, which have sophisticated modern architectural manifestations and deprived them of that sincerity, power and simplicity which can result only from concentration of intelligent effort and from strong convictions, based, not upon the traditions of the studios, but upon a philosophical analysis of our vast resources of

design.

Without presuming to criticise the methods of instruction in our present conducted, and certainly with a schools of architecture, as at present conducted, and certainly with a grateful appreciation of what their professors and teachers have already accomplished in the service of a purer and nobler art, we would ask them to systematize and coordinate the study of all the historic styles, as they were successively developed in their progress from picturesque barbarism to the elegance and refinement of the higher civilizations; to make this study an essential part of the curriculum of the schools; to teach the outlines of history by the architecture which was a part of it; not to select certain of the styles for exclusive study, leaving what seems the less interesting and beautiful, the less highly organized or less applicable to our use, to be picked up by chance, if at all. Our project would be to pursue this study of history through its manifestations in architecture from archaic to modern times, or, at least, to the nineteenth century, not with the minute patient scrutiny of the archæologist, but with the spirit of the artist seeking to learn how forms and ornament were developed out of the genius of civilizations and peoples and how, as they were significant of the progress of human culture in the past, they should be used in the service of modern art.

We recognize that the best discipline of the faculties of design can be obtained only by especial and continued practice with the most highly organized of all these styles, and that Classic art must con-

tinue to be the means, but not the end of this discipline

We believe that this organized study of the historical styles would prevent the graduates of our schools from becoming mere spend-thrifts with their inheritance, and that with this new knowledge, apparently never heretofore taught, they would learn to be tolerant. "Savoir c'est pardonner." They would practice, not with unreasoning prejudice in favor of this, that, or the other forms of art, nor with the indifference of calculting but with a same of the deep with the indifference of eclecticism, but with a sense of the deep significance of these forms, to whatever era they belonged, as expres-sions of the history of our race, and with a conviction that decorative forms in historical architecture are not mere fashions or accidents of the times, nor mere independent isolated phenomena, but symbols, slowly evolved by processes of art from certain definite conditions of human life, as links in a continuous chain of evolution, as genuine

and serious manifestations of art, however rude.

Would not this larger comprehension, thus obtained, of the significance of ancient decorative forms and this increased respect for them as means of expression have an immediate effect upon their adjustment to modern uses, and ultimately upon the development of contemporary style? Would they not be used with more intelligence contemporary style? Would they not be used with more intelligence and feeling? Would not our young architects be less subject to undisciplined caprice on the one hand, or to academical prejudice on Would they not become in the best sense catholic and more worthy to inherit the inexhaustible wealth of the past? Would they not, above all perhaps, be freed from the mean virtue of conformity or archæological accuracy, which has done more to retard the progress of archive as a fine art than any other influence except

ignorance and pretense?

There can be no doubt that as the true basis of architectural composition of the highest sort is to proportion and to decorate structure, and that as structure is constantly developing with new methods, new devices of engineering, and new materials, the architecture of new devices of engineering, and new materials, the architecture of the immediate future must necessarily assume new character, at least in its outlines, supplanting to a great extent those Classic or romantic ideals or standards which custom has arbitrarily imposed upon modern practice. Are our present methods of education preparing our young men to accept these inevitable changes without a wasteful and futile affort to effect a reconciliation between angient academic and futile effort to effect a reconciliation between ancient academic prejudices and these new things? Will the architecture of our country in the next decade express in no doubtful terms the civiliza-tion of America in its best estate? For this difficult task do we not need a much more scientific coordination of precedent, a much more philosophic analysis of the architecture of the past than is secured by our present methods of education? The question evidently is, not, how are we to effect a compromise between engineering and architecture, but how are we to convert engineering into architecture, how are we to use the immense resources of beautiful precedent at our command in order to translate this prose into the poetry of a high art? The language of form, made accessible to us by a system high art? The language of form, made accessible to us by a system of study such as we propose, would be as copious as the language of words at the command of Tennyson and Browning, of Longfellow and Lowell. The vast vocabulary of these great masters, these "builders of the lofty rhyme," is made up of words and phrases derived from the entire experience of mankind, not from any especial era, or from any selection approved by any school or academy of learning. They could not have expressed their inspirations with any such arbitrary or scholastic limitations of terms. The duties and the privileges of the modern architect in respect to his art are the same as those of the modern poet in respect to literature, but the prejudices

of the architect's education have, by exclusions of language, apparently entirely artificial and unnecessary, embarrassed his efforts to express in terms of art the exigencies of modern structure, material and use. He is still trying to write new songs and sonnets and epics in Classic Latin or mediæval French, and is still wondering that no one but himself comprehends or enjoys them. We are conscious that this analogy between literature and architecture must not be pushed too far, for the two arts have very different messages to deliver to the intelligence of mankind. Architecture, of course, can express emotions and thought only indirectly by symbols. But the analogy is close enough to support and illustrate our argument.

If the American Institute of Architects should succeed in persuading the schools of architecture throughout the country to teach the whole course of history by architecture, and should open to them the whole series of historic forms in the order of their evolution without prejudice, the genius of the more spacious times in which we live, which are the culmination and the result of all that has gone before, would stand a much better chance for adequate expression. Let the schools teach our young men not to conceal or disguise or condone in a mask of cold convention the inevitable changes of form which must come in process of time with the changes in our social and economic conditions, but to welcome them frankly and express them, not with quotations from other tongues, not with the affectations and pedantries of academical learning, but with the large freedom derived from a comprehensive knowledge of all that has been done or said in forms of art by all peoples.

It seems to us that it is only by some such process as this that architecture as a fine art can keep pace with science. We are not proposing any such folly as the deliberate invention of a new style, proposing any such folly as the deliberate invention of a new style, or any possible amalgam of old styles, but we are inquiring whether it is not practicable by an analytic study of precedent, without arbitrary preferences, to apply to the art of our times a synthetic method of evolution. Our art should be an art of scholars and artists, not of antiquarians, nor of amateurs, nor of pretenders. They should be instructed and inspired by the past, not controlled by it. As viewed from a philosophical standpoint, do not our present methods, without such a comparative study of form as this, open us fairly to the charge of empiricism?

If we may not in this way accomplish a revolution in the architecture of our time (we do not desire a revolution, but a reform), we may at least give to the architects of the next decade a far wider

may at least give to the architects of the next decade a far wider point-of-view and a far deeper understanding of their functions and responsibilities in an evolution of style, which, if it is not directed, will continue to be lost in fruitless and disorderly experiments.

When we see members of the Institute, men of the highest available professional training, repeating at the same times and in the same places, châteaux of Francis I, town-halls of Henry IV, Italian villas of the cinque-cento, palaces of Palladio, decorating casinos and theatres with every form of Arabian or Saracenic art, building libraries in southern Romanesque, country houses like the farms of Normandy, churches like those of Edward IV or St. Louis, dwellings after those of every era of English history, public structures in every form of the Renaissance — when we see them dissipating their forces in these barren revivals, each one according to his fancy, we may well doubt if this is the best possible use of our knowledge of precedent. Can the discipline of our schools produce no better result than this confusion of tongues? Is it not time for us to consider how we can work together with profitable unity of effort, each aiding the other? Does not the inevitable modern accent which may be detected in all these attempts to speak ancient languages prove that characin all these attempts to speak ancient languages prove that characteristic modern style is possible, and is only restrained from its full and natural development by the prejudices of our education? If the secret of rational progress does not lie in a more scientific and thorough method of studying the styles and the historical conditions from which they grew, to the end that we may use them not as mere imitators and revivalists, but as artists and creators, where else shall e seek for a remedy?

The new type born of such a study must necessarily be infinitely richer, more elastic, more various than any of those which lie behind must include all their virtues and none of their vices. would substitute a true vernacular for one which is spurious and vulgar. Architectural effort united upon such a type as this, would not imply a uniformity, which would soon become wearisome and monotonous. It would rather imply variety and unity, effective concentration of power, and such a concentration means logical and consistent progress. Such a progress with our present methods surely we are not achieving.

Hitherto, it must be sadly confessed, we have treated our great

resources, if not like undisciplined barbarians with the spoils of certainly more like the arbiters of Parisian fashions, than like artists and scholars. The new education, far less pedantic, and far more cosmopolitan and generous than the old, and also far more discriminating, must teach us the real value and meaning of our inheritance, and how to use it with a full appreciation of our responsibility to art and to the civilization of our time. Henry Van Brunt.

A SIGN PAINTED BY MILLET. — Offers have been made by the Louvre Museum for a blacksmith's sign representing a horse tied to a door, which still swings before the smithy at Gruchy, near Cherbourg. It was painted by Jean François Millet, the painter of the "Gleaners" and the "Angelus." — Providence Journal.



SKELETON CONSTRUCTION AND THE FIRE-DEPART-MENT.¹

SEVEN hundred and fifty years ago, a little knot of architects were busy with the solution of a new problem. All of them had been educated under the same conditions, had been taught the been educated under the same conditions, had been taught the same rules, had copied the same models, and studied the same methods of construction. Now, to all of them, almost simultaneously, had been presented a new set of conditions, which must be fulfilled, but in the fulfilment of which the models upon which their instruction had been based gave them little assistance. Those models expressed, by their thick walls, heavy piers, horizontal lines, and small, round-arched openings, solidity, calm, dignified seclusion and aristocratic sanctity; and now had suddenly arisen in the community a fever of revolt against aristocratic and sacerdotal exclusiveness, a passion of demogratic feeling, to which the narrowness and ness, a passion of democratic feeling, to which the narrowness and heaviness of Benedictine architecture were intolerable. Every-where was heard the demand for air, space and light, for vast, where was heard the demand for air, space and light, for vast, bright, open halls, in place of the gloomy monastic churches in which the laity, for five centuries, had been permitted only to listen, from behind a screen, to the prayers of those holy persons whom alone the Saviour of mankind permitted to approach His altar. In one word, the modern spirit had been born, and upon a few men had fallen the task of expressing it in architecture. You all know how they acquitted themselves of this duty; how, starting with the necessity before them of providing vast and lofty buildings, with slenderer supports and larger windows than had ever been seen before, they not only completely satisfied these requirements, but, almost within one man's lifetime, developed a style of architecture absolutely new, even to its smallest detail, and in this style produced buildings which, speaking to architects trained to appreciate many buildings which, speaking to architects trained to appreciate many sorts of architectural beauty, I will not call the most beautiful in the world, but which may be justly described as the most interesting in the world, through the richness of artistic feeling which shows itself everywhere in them.

A comparison of the last decade of the nineteenth century with the era of the emancipation of the communes may seem historically unwarranted, but, architecturally, there are some striking points of similarity. With us, as with the people of Paris and Amiens and Rouen toward the end of the twelfth century, buildings of the sort that our grandfathers erected no longer serve our purposes. It is true that we can use their dwelling-houses comfortably enough, but, for the occupations and amusements which we carry on in common with other people, we need, and must have, stronger, lighter, more which other people, we need, and must have, stronger, lighter, more wholesome and more enduring structures than any known to our forefathers. As economy of time must be practised to the utmost in our modern system, each sort of business must be as far as possible leveling to and this involves collecting poor a price and the product of bly to the modern high building, with its many stories, and its swift-running elevators, standing upon a lot whose situation alone

Notwithstanding all that has been said in ridicule of the "sky-scrapers," there is no doubt that these high buildings meet a need that has been urgently felt, and will continue to be felt more and more in our large cities; and, however conservative we may be in our notions of the virtues of six stories of solid wall, we all know that the buildings that the age requires, standing on land worth two hundred dollars a square foot, must be made with protected metallic skeletons, and we have probably prepared ourselves, by earnest study of the subject, to make the best of the new construction, whether it appeals to our artistic sympathies or not. That it should whether it appeals to our artistic sympathies or not. That it should at once appeal to our artistic sympathies is not particularly to desired. The people who cast off the old love with most alacrity are not those who gain the firmest hold on the affections of the new one; and a regard, based on an appreciation of the many excellent qualities of the new architecture, will be the best foundation for an esteem which, we may hope, will hereafter find artistic expression.

Among these excellent qualities, the greatest ought to be, and will be, if architects choose to have it so, the security of the modern high building against fire. As a rule, fire-engineers are disposed to condemn those already erected, for the reason that they are so lofty that streams of water cannot be thrown into them, and so incautive like the stream of the reason can be present an impense mass of fund that streams of water cannot be thrown into them, and so incautiously built, in many cases, as to present an immense mass of fuel, in a condition for burning comparable with that of a pile of kindlings built up in a chimney; and they are certainly justified in their criticism; but there is no necessity for filling these blast-furnaces with woodwork, and, where the architect is allowed to apply his knowledge, it is easy to make the protected skeleton, of fifteen or twenty stories, not only safe against injury by fire within, but extremely valuable as a bulwark against the course of conflagrations outside it. In the presence of so many of my brethren, much better qualified than myself to treat of the details of the new construction, will not presume to point out the methods which architects should follow in carrying out designs of the methods which are necessitothe follow in carrying out designs of the sort here considered, but it will do no harm to suggest certain possibilities, in the way of application of materials, which may contribute in new ways to the diminution of the fire-hazard. It is well understood by architects that no building, however constructed, is safe against fire, unless the amount of

 1 A paper by T. M. Clark, F. A. I. A., read before the American Institute of Architects at their Twenty-eighth Annual Convention.

combustible material contained in it is either very small, or is divided into small portions by incombustible partitions; and it is also well known that a building, very safe against internal hazards, may be destroyed by the attack of a fierce conflagration from the outside. Great as has been the progress in the art of incombustible construction within the last ten years, there is still much that can be done, with materials already at hand, in fortifying our lofty buildings against both internal and external risks. Where the fireproof building of ten years ago had its partitions set with wooden studs, following in the bulker of building between the statement of the building of tell years ago had its partitions set with worden study, filled-in with blocks of hollow plaster, or porous terra-cotta, and its wooden doors and windows trimmed with wooden architraves, the modern structure is divided by partitions of cement, on metallic lath, held by uprights of channel or angle iron, or of wrought-iron pipe, and, in many cases, provides iron frames and casings for its doors and windows; and the fireproof building of the future will undoubtedly add to these, either doors entirely of metal and glass, such as are made in Germany, and occasionally here, or of wood, covered with sheet metal, in the manner recently introduced, which gives a light, handsome and perfectly incombustible door, at a very small expense.

With marble floors, on concrete or terra-cotta arches, between iron beams, plenty of partitions of iron and cement, metal-covered doors and windows hung in iron frames, and bases and wainscoting either of marble or of metal-cased wood, the internal hazard of the high fireproof building can be reduced to almost nothing, as a fire in one room could not spread to the next. There is, however, the external hazard still to provide for, and here, also, there is still some ternal hazard still to provide for, and here, also, there is still some progress to be made. Obviously, the most vulnerable point in such buildings is to be found in the windows, which, as at present made, offer no resistance whatever to a fire outside. For skylights we have found, in the new wire-glass, a material at once transparent and fire-resisting, and there seems to be no reason why a similar material should not be used in the mindow in the material should not be used in the mindow in the material should not be used in the mindow in the material should not be used in the mindow in the material should not be used in the mindow in the material should not be used in the mindow in the material should not be used in the mindow. and fire resisting, and there seems to be no reason why a similar material should not be used in the windows in the vertical, as well as the horizontal, walls. Of course, it is not to be expected that the tenants of a great office-building would be satisfied with the ordinary wire-glass for their windows; but there is nothing to prevent us from designing the most beautiful lace-work of which we can conceive, and having it executed in gilded or silvered wire, and embedded in the polished plate-glass of the windows of our "sky-surprer" buildings. Such treatment whether the tenants liked it or scraper" buildings. Such treatment, whether the tenants liked it or not, would add greatly to the external appearance of such buildings, and would render them practically secure, no matter how numerous or ample the openings, against fire from the outside, as the glass, held by the wire network, would keep its place until it was melted

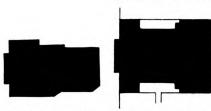
Again, we are told by the fire-engineers that the brick and terra-cotta with which we clothe the steel skeleton of our new buildings are liable to destruction by the combined effect of heat and water, and that, when exposed to a serious conflagration, either from the inside or the outside, they are likely to fall off, and expose the steel structure. Experience has shown that there is truth in this, but it structure. Experience has shown that there is truth in this, but it does not follow that high building must be condemned in consequence. Our medieval brethren, in attempting to adapt their old-round-arched models to their new conditions, found that their building must be their new conditions are their reason desist from their round-arched models to their new conditions, found that their buildings generally fell down. Did they for this reason desist from their attempts to solve the problem imposed on them? No. They knew, as we know, that the problem must be solved; and to solve it they at last invented a form of arch which had never been seen before since the beginning of the world. So strange and outlandish did this arch appear to them that for years, although they were compelled by constructive necessity to use it, and did use it with great skill they disguised it so that no one should notice that their build notice that their build. skill, they disguised it, so that no one should notice that their buildings contained anything but the round arch of their forefathers. In the same way, if brick, stone and terra-cotta cannot be made to protect efficiently the metal framework of the buildings which we are trying to make fireproof, something else, that will accomplish this object, will assuredly be employed, no matter how much our tradiobject, will assuredly be employed, no matter how much our traditions may have to be upset for the purpose. For example, there is no practical reason why a steel skeleton should not be clothed first with cement-mortar, on iron lath, and then cased entirely over with copper, or brass, or auminium, riveted at the joints. With a little grouting between the steel-work and the casing, to give a substantial backing to the sheet metal, a building of this sort would be almost indestructible. Fire and water would expend their force upon it in value of exposure to the weather would only increase the vain, centuries of exposure to the weather would only increase the beauty of its patina, and, if well anchored to the ground, and cross-braced with moderate skill, no earthquake could bring it down. It would be a queer-looking affair, no doubt, and the critics would have plenty of sport at its expense; but we may remember, in our efforts to accomplish, by the light of our own intelligence, the results that are required of us, that it was the ugliest of the ducklings that grew up to be a swan, and that in the solution of the most important, most difficult, and yet most imperious problem that confronts us certainly lies, to a great extent, the future of the art of architecture in America.

Ashes as a Building-material. - A building has been erected by Mr. Wagner, architect at Limburg, solely of materials formed of ashes, without any admixture of sand. It is claimed that almost any kind of hard natural stones have been successfully imitated with this very cheap material. - Invention.



THEATRES.1 - VI.

THE CHELTENHAM THEATRE AND OPERA-HOUSE, AND GRAND OPERA-HOUSE, HULL.



Plan of Cheltenham Plan of Grand Opera-house,
Theatre. Hull.

In the present article, I purpose dealing with two of Mr. Frank Matcham's provincial the atres. The Cheltenham Theatre and the Hull Opera-house may be accepted as examples of some of the smaller theatres which are to be found in English country.

towns. These buildings have usually to be erected with a limited amount of capital and upon a site which does not always comply with the most advanced requirements for theatres in the chief cities of the world. These two important facts must therefore be borne in mind while examining the plans which are the subject of the present paper.

resent paper.

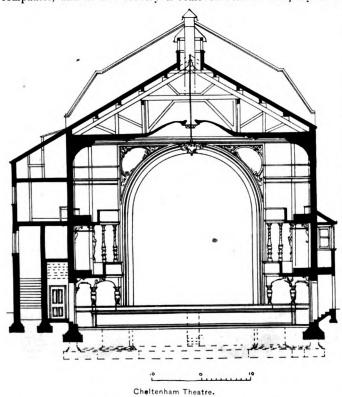
The usages to which the English provincial theatres are put are multifarious: the old days of stock companies attached to a theatre, the same actors playing in all changes of the "bill," whether pantomime, comedy, or tragedy, are past, and the provincial manager depends upon the travelling companies dispatched from London to occupy his stage during the greater portion of the year, thereby changing his "bill" weekly or oftener. Nearly all theatres in English country towns, however, produce annually a spectacular pantomime which is the only play acted in the year having a long run.

Such, then, is the business carried on in the class of theatre represented by the plans of the Cheltenham and the Hull Opera-houses now before us, and, in planning them, the architect had to be ever mindful of the constant changes in the class of entertainment, the frequent moving in and out of large quantities of baggage, luggage and scenery belonging to the various travelling companies, as well as the class of people dwelling in the town and the probable numbers which would frequent the various parts of the house.

In large manufacturing districts where the factory-hands will most

In large manufacturing districts where the factory-hands will most likely be the chief patrons of the house, the cheaper parts, namely, pit and gallery, must be made by the architect of such a size as to render to the manager the major portion of his revenue. In large provincial towns, having wealthy suburban residents, the dress-circle and stalls are treated on the lines of London houses; while, again, in fashionable seaside watering-places, where the favorite actors and actresses follow their more wealthy patrons, the dress parts of the house are the most important.

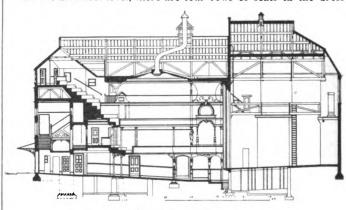
In designing the stage of this class of play-house, due consideration has to be given to size of the scenery brought by the travelling companies, and as this scenery is removed with the company from



the theatre, there is no need to provide room for the storage of it, and only such scene-docks are required as are requisite for the disposal of the scenery during the play.

The Cheltenham Theatre consists of three floors, the ground-floor being occupied by five rows of stalls and sixteen rows of seats in the pit.

On the first floor-level, there are four rows of seats in the dress-



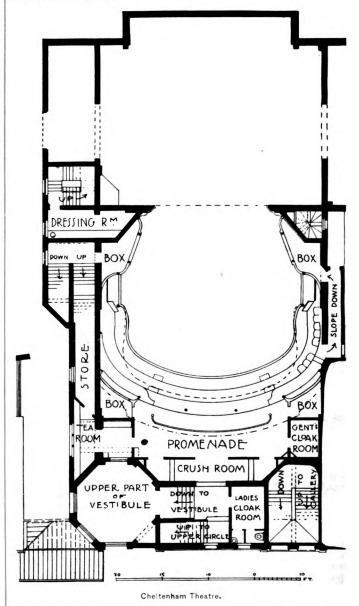
Cheltenham Theatre.

circle and four private boxes, while the gallery contains eleven rows, three of which, in front, are divided off into a higher-priced seat.

The entrance to the dress-circle and stalls is through a small

The entrance to the dress-circle and stalls is through a small octagonal vestibule from which the grand staircase ascends. The pit-entrance is in the centre of the grand façade with an extra exit into an open space at the side of the house, close to which there is also an extra exit for the stalls.

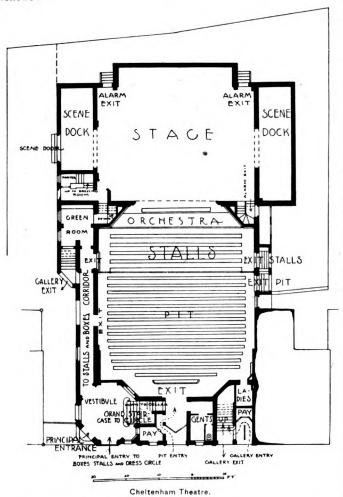
There are two staircases serving the gallery, one for entrance and one for an extra exit.



The line of the circle-front for various tiers, both in the Cheltenham and Hull Theatres, is one so frequently adopted by Mr. Matcham, being a modification of the horse-shoe form, as was seen in the plans of his Grand Theatre, Islington.

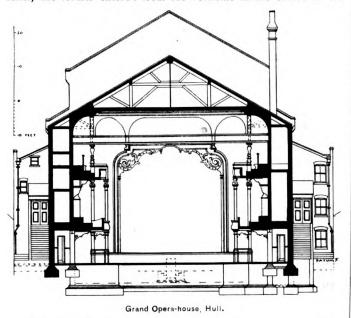
¹ Continued from No. 974, page 73.

Some of the chief dimensions of the Cheltenham House are as follows:



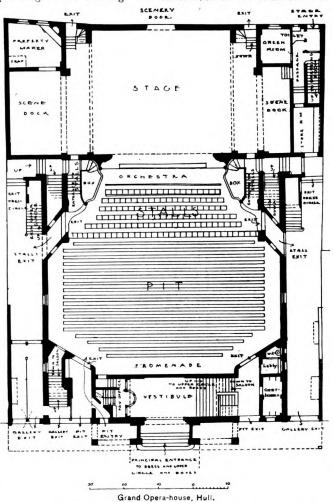
Width between main walls of the auditorium	
Depth between the back wall of the pit and the curtain line	60 "
Width of stage	48 "
Width of proscenium-opening	25 "
Depth of stage from curtain line to back wall	41 "
Distance from dress-circle front to curtain line	37 "
Distance from gallery front to curtain line	42 "
Height of proscenium-arch	31 ''
Height from stage floor to gridiron	43 "
Height from pit floor to sun-burner	40 "

The Grand Opera-house, Hull, is a larger building than the one just described, and from the plans it will be gathered that it is built upon a more suitable site. The ground-floor is divided into pit and stalls, the former entered from the vestibule in the centre of the

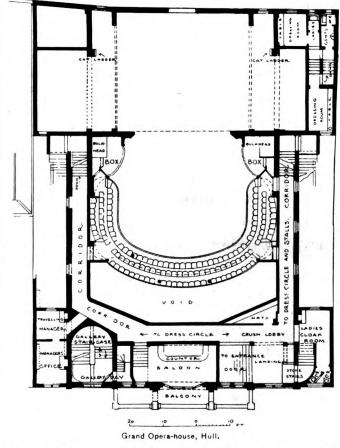


main front, and the latter by specially-arranged queue at one side of the façade with an exit by the side.

The site here allows for special means of exit and a more uniform planning of the building. On either side of the stalls there are



special extra exits, while there is an additional exit from the pit in a position corresponding on the plan with the entrance. The same

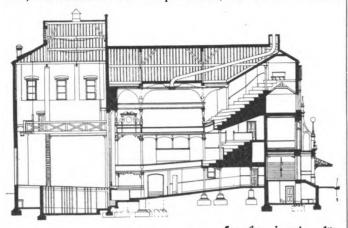


symmetrical arrangement of entrances, and exits to correspond, is carried out to all other parts of the house — a plan which is ever

welcome, as it always ensures the easy finding of the "extra" exits

by the public.

Following these lines, the dress circle, although only consisting of three rows of seats, has, in addition to the grand entrance in the front, two staircases next the proscenium, one on each side of



Grand Opera-house, Hull.

the house, available for exit. The gallery-entrance and exit stair-

cases are also in duplicate, ensuring every measure of safety possible.

The site being open at the back affords means of rapid egress for the actors, both directly from the stage at either side, and by an exit at the foot of the dressing-room staircase. The stage being a high one for the class of building, the proscenium wall is carried well up above the auditorium-roof, so cutting off the danger of fire spreading from one roof to the other.

A large scene-door is provided in the centre of the back wall of the stage, while the scene-dock room is similar to that of the theatre I have just described above.

Generally the plan of the Hull Grand Opera-house may be considered most satisfactory, especially when bearing in mind the principles which rule the designing of such buildings as these.

I herewith subjoin a table of dimensions by which the two theatres

which have formed the subject of this paper may be compared.

Width between main walls of auditorium Depth between back wall of pit and curtain line		
Width of stage		
Width of proscenium-opening	29	4.6
Depth of stage from curtain line to back wall	36	"
Distance from dress-circle front to curtain line	38	"
Distance from gallery front to curtain line	43	**
Height of proscenium-opening		
Height from stage floor to gridiron		
Height from stage floor to sun-burner	43	"

[To be continued.]



THE SKETCH-CLUB OF NEW YORK.

HE monthly meeting and dinner of the Sketch-Club of New York was held at the Club-rooms Saturday, October 6, 1894. About eighty members were present. The guests of the Club were Mr. Hastings, of Carrère & Hastings, M. Masqueray and Messrs. Garden of the Chicago Sketch-Club. Mr. Hastings read a paper on planning, accompanied by stereopticon views. This was one of the most interesting papers that the Club has ever listened to. M. Masqueray criticised the competition drawings of a "Mountain Inn," placing the drawing by Willard Hirsh first, E. A. Josselyn second. M. Masqueray also criticised the summer sketches which are yearly handed in at this meeting. Some of the sketches receiving favorable mention were by E. A. Josselyn, T. H. Harmon, A. T. Rose, Mr. Pirson, W. Channing Cabot and H. C. Pittman. The meeting adjourned at 11 p. M.

H. C. Pittman, Rec. Sec'y.

H. C. PITTMAN, Rec. Sec'y.

T-SQUARE CLUB OF PHILADELPHIA.

THE first regular meeting of the T-Square Club was held on October 3d, at the Club-rooms in the Pennsylvania Museum and School of Industrial Arts. Owing to the amount of business to dispose of, the award for the summer sketches was postponed to the

L. C. Hickman, chairman of the committee on the formation of a National Sketch-Club Association, reported that the Boston Architectural Club and the New York Sketch-Club had entered into the agreement and read the programme for the first inter-club competition which was prepared by the committee on education of the Beaux-Arts Society.

The officers elected for this season are: Walter Cope, President;

E. V. Seeler, Vice-President; A. C. Munoz, Secretary; D. K. Boyd, (re-elected) Treasurer; Wilson Eyre, Jr., (re-elected) Executive Committee; F. A. Hays and L. C. Hickman.

A. C. Munoz, Sec'y.

BROOKLYN CHAPTER OF THE A. I. A.

THE first annual meeting of Brooklyn Chapter of the American Institute of Architects was held at the residence of Mr. Isaac E. Ditmars, No. 227 Garfield Place, Brooklyn, on Monday evening, October 8th, and the following officers were elected to serve for one

President, Louis DeCoppet Berg; Vice-President, S. B. Snook; Secretary, A. G. Thomson; Treasurer, Halstead P. Fowler; Board of Directors, (Fellows), George L. Morse, Walter Dickson, Isaac E. Ditmars; Board of Directors, (Juniors), Washington Hull.

The President and Secretary of the Chapter are ex-officio President and Secretary of the Board of Directors.

The standing committees elected were as follows:

Exhibition Committee: — Charles T. Mott, George L. Morse, William C. Hough.

Membership Committee: - Walter Dickson, Charles T. Mott, D. C. Ernest Laub

Professional Practice: - George L. Morse, Walter Dickson, Isaac E. Ditmars

Current Work: - S. B. Snook, William C. Hough, D. C. Ernest

Social Intercourse: - Halstead P. Fowler, Charles T. Mott, Wash-

ington Hull.

The President and Secretary are ex-officio members of all of the five standing committees.

The various grades and dues of membership in the Chapter are: Professional Members: (Fellows of the Institute only eligible to

this grade), ten dollars a year dues.

Junior Members: (Young architects and draughtsmen not Fellows of the Institute), five dollars a year dues.

Non-Professional Members: — (Amateurs and artists, not practising architecture), five dollars a year dues.

The membership of the Chapter consists of five Fellows and five

The membership of the Chapter consists of five Fellows and five members who are up for election before the A. I. A., one Junior, and three Non-Professional Members, as follows: Professional Members, Walter Dickson, Louis DeCoppet Berg, S. B. Snook, A. G. Thomson, George L. Morse, D. C. Ernest Laub, Charles T. Mott, Isaac E. Ditmars, Halstead P. Fowler, W. C. Hough; Junior Member, Washington Hull; Non-Professional Members, George Ingram, Oswald Speir, Gustave A. Jahn.

There are quite a list of names awaiting election to the Chapter in the Junior and Non-Professional grades, but the Membership Committee will await the result of the proposed amendments to the Constitution, at the Annual Convention, before taking action on these names.

these names.

After the business meeting, the members repaired to the diningroom and did justice to a generous repast.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

THE CAPITOL, COLUMBUS, O. REVERSED VIEW FROM THE SOUTHEAST.

[Gelatine Print issued with the International and Imperial Editions only.]

HE history of the construction of the Ohio Capitol is as follows: HE history of the construction of the Ohio Capitol is as follows: In 1838 the Legislature appointed a commission of three who were authorized to begin the work of erecting a new Capitol. The commission advertised for designs, offering three premiums. Fifty or sixty designs were sent in by architects throughout the country. The design of Henry Walter, of Cincinnati, was awarded first place, that of Martin E. Thompson, of New York, the second, and that of Thomas Cole, Catskill, N. Y., the third. After some modifications, the plan of Mr. Walter was adopted. The commission in whose charge the building began seems to have had a proper appreciation of the subject, for in their first report to the Governor, in speaking of their idea of what the building should be, the following ciation of the subject, for in their first report to the Governor, in speaking of their idea of what the building should be, the following language occurs: "In its exterior form and in its interior disposition of apartments there should be united that beauty and grandeur which the rules of art require, and which comport with the dignity and wealth of the State. The degree of civilization and knowledge prevailing in a community is always clearly designated by its works of art, and by none more than its architecture."

Not much was done towards the execution of the building for the

Not much was done towards the erection of the building for the first two years, at which time the project was abandoned by the Legislature repealing the act. In 1844 the Legislature again took the matter up and appointed a commission to secure a reduced and modified plan. After investigation, the commission reported in favor of continuing on the plan already adopted. The estimated cost of the building at that time was \$400,000. No active steps were taken

toward actual construction until 1848, by which time Mr. Walter disappeared from the scene, and W. Russell West, of Cincinnati, became the architect. He somewhat modified the detail of the plan became the architect. He somewhat modified the detail of the plan and supervised its erection until 1854 (at which time it was up to the square) when he resigned, probably from political pressure, and N. B. Kelley, of Columbus, was appointed architect. Mr. Kelley found that \$900,000 had already been expended and that \$600,000 more would be required to complete it, according to his ideas. When Mr. West resigned he took the plans of the building with him and refused to turn them over to Mr. Kelley, who was compelled to make the drawings for the finish of the building from the time he took charge. He criticised the work of Mr. West to some extent, and his report in regard to the cost seems to have brought forth an inquiry as report in regard to the cost seems to have brought forth an inquiry as to whether it was best to complete the building or not. In 1856 Mr. Thomas U. Walter and Mr. Richard Upjohn, of New York, were called in as advisors, and the work progressed under Mr. Kelley's charge for two years. In 1858 a new commission was appointed who displaced Mr. Kelley and employed Isaiah Rogers, who served as architect until 1860, when the building was completed. It had already been dedicated in 1857, being partly ready for occupancy at that time. It eventually cost about \$1,400,000.

There was some controversy between the various architects in regard to the dome or cupola, which has been the subject of criticism ever since. It seems, however, that it has been finished according to Mr. West's and probably in accordance with the original design of Mr. Walter. When Mr. Kelley came in charge of the work he designed a dome as a finish, but this was condemned by Walter and Upjohn as not being in accordance with Grecian Doric architecture, to which Mr. Kelley replied, neither were windows, and report in regard to the cost seems to have brought forth an inquiry as

architecture, to which Mr. Kelley replied, neither were windows, and that the dome was no more of an innovation, and quite as appropriate as to have windows in the walls. When Mr. Rogers came in charge of the work he designed a colonnade to surround the cupola, which was to retain its conical roof, and also designed projecting porticos on the long façades. But these improvements were never made. The building proper is 304' x 184', 60' high to the square. Interior diameter of rotunda 64' and its height 124'. It stands in a park of ten acres.

THE NEW YORK STATE BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MESSRS. MCKIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y. DRAWN BY MR. W. H. ORCHARD.

ACCEPTED DESIGN FOR BEXAR COUNTY COURT-HOUSE, SAN ANTONIO, TEX. MR. J. RIELY GORDON, ARCHITECT, SAN AN-TONIO, TEX.

HOUSE AND STABLE, CHESTNUT HILL, MASS. MESSRS. LONGFEL-LOW, ALDEN & HARLOW, ARCHITECTS, BOSTON, MASS.

TAYLOR LIBRARY, MILFORD, CONN. MR. J. W. NORTHROP, AR-CHITECT, BRIDGEPORT, CONN.

HOUSE OF MR. FREDERICK WILL, ROCHESTER, N. Y. MESSRS. BLOCK & BARNES, ARCHITECTS, ROCHESTER, N. Y.

[Additional Illustrations in the International Edition.]

DINING-ROOM IN HOUSE OF MR. E. F. SEARLES, GREAT BAR-RINGTON, MASS.

[Copper-plate Etching.]

STATUE OF THE REPUBLIC, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MR. DANIEL CHESTER FRENCH, SCULPTOR.

[Gelatine Print.]

This view, although taken from the rear, gives a good idea of the size of Mr. French's colossal work, which (spared by fire) still stands at the easterly end of the great lagoon. It is made of plaster, gilded, is 65 feet in height to the top of the head and rests upon a pedestal 35 feet high.

NEW PREMISES, OLD SQUARE, BIRMINGHAM, ENG. MESSRS. ESSEX, NICOL & GOODMAN, ARCHITECTS.

Among our illustrations this week is a perspective view of the front elevation of the new premises now in course of erection for Messrs. Lunt & Co., warehousemen and haberdashers. The new premises will consist of extensive warehouses in the rear, five stories in height, with a block of shops and offices in the front. The front elevation will have Burmantoft's buff terra-cotta dressings, with Edwards's Ruabon red facing-bricks.

A STREET HOUSE.

This illustration is a reproduction of a design by Mr. John Cash, of Willesden, which was exhibited this year at the Royal Academy.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

A QUESTION OF VENTILATION.

NORFOLK, VA., September 11, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:-

Dear Sirs, - Will you kindly decide which of the two following

statements is more nearly correct?
Page 57, Billings's "Ventilating and Heating," edition 1889: "In order to secure a thorough distribution of the incoming air, it is usually recommended that the discharge openings should be in the side of the room opposite to that in which the fresh-air openings are, and as far as possible from them. In all dwelling-houses, however, and in rooms not having windows on opposite sides nor containing a sufficient number of occupants to exercise any special influence on the temperature, good ventilation will be secured by placing the fresh warm-air openings on an inner wall, and the discharge openings in the same wall at the same or a lower level. . . . But when we come to deal with rooms having a large floor area in proportion to the height, and containing fifty or more persons, whose heat production is a factor that must be taken into consideration, there is some danger by this method that there will be an unsatisfactory distributions. tion of the fresh air when the temperature of the external air is not below 50° F."

In the pamphlet on "Ventilation and Warming" issued by the Fuller and Warren Company, page 6, we find: "Upon this basis, to attain the best results, the introduction of warmed fresh air should be at a point upon an inside wall adjacent to an outside wall; the point of exhaustion should be well within the room upon the inside wall, and, whenever practicable, upon the same side as the point of introduction." Their position is illustrated by six cuts, all of which tend to show the falsity of the statements first quoted.

Very truly yours,

John Kevan Peebles.

tend to show the falsity of the statements first quoted.

Very truly yours,

John Kevan Peebles.

[Both authorities are right, but they are speaking of different things. Dr. Billings is describing the course of warm-air currents in a small room, heated, let us say, by warm air from a furnace register. Suppose such a room to have a register in an inner wall, with an open fireplace near it, in the same wall. In this case, the warm air from the register will ascend first to the ceiling, then creep along the ceiling to the outside wall of the room, and there becoming cooler, will descend to the floor, and will cross the floor back again to the fireplace, through which it will escape. It is obvious that a circulation of this kind moves the air in the whole room, which is what Dr. Billings means; and that this is the actual course of the air currents in such a room, any one can ascertain for himself.

The Fuller-Warren Company, on the other hand, consider, not dwelling-house rooms, nearly cubical in shape, and with nothing to move the air but the difference in weight between warm and cool air, but school-rooms, with low ceilings, large floor area, and efficient means for producing strong currents inward, or outward, or both; and with requirements, in the way of distribution, quite different from those to be observed in dwelling-houses. Under these conditions, the practice of bringing in a strong current of air, high above the floor, from that part of an inside wall nearest the window-wall, and extracting it at another point in the same wall, as near as may be to the other corner, is simply a modification, suited to the circumstances, of Dr. Billings's plan. No scholars sit near the windows, an aisle, three and one-half to four feet wide, always intervening between the nearest desks and the window-wall, so that a current, projected, as in the Fuller-Warren system, with force enough to carry it horizontally the whole length of the room, when introduced at the corner next the window-wall, is deflected inward by the cold

ROUGHCAST.

LANCASTER, PA., October 1, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT: -

Dear Sirs, — Can you give me any information with reference to the best method of applying roughcast or pebble-dashed plasterwork to the exterior of a brick wall? The desire is to have the finish coat colored before applying. Would hair-mortar, or cementmortar be the most desirable? Will the cement have any effect (if used) upon the coloring matter.

Any information you can give will be appreciated by Yours truly, J. V. D.

[The brick wall should be new. Old walls get a greasy coating, which must be removed by thorough cleaning, and, if possible, hacking the surface, before roughcast can be made to stick to it. Supposing the brick wall to be in proper condition, it must be thoroughly wet, — not slightly

dampened, but soaked, so far as the outside is concerned, by means of a hose, or by throwing water repeatedly against all parts of the surface. The first coat of mortar should be made with at least equal parts of lime and cement. It would be better without any lime, but, of course, much more expensive. Clean, sharp, rather coarse sand should be used, but no hair. The mortar is to be mixed rather thin, and thrown on the wall by means of a sort of wooden paddle. It may be spread with a trowel, but the effect will not be so good, and it will not stick so well. The second coat should be made with best Portland cement and a little sand, and the pebbles mixed with it, and applied in the same way. It is better to put it on before the first coat is dry, but, if this is impracticable, the first coat must be well wet before the second is put on. For coloring the cement, mineral pigments must be used, such as Venetian red, or the ochres. If the natural color of the cement is too dark, a very little lime may be added. — Eds. American Architect.] ARCHITECT.

COLORING PLASTER CASTS.

PHILADELPHIA, PA., October 6, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, - Please inform me through your columns the best way to treat plaster casts, to give them that yellowish (ochre) appearance, also the preparation for treating them for an antique green, and how best to apply.

AR CHI. and how best to apply.

[PLASTER casts are said to be colored to resemble old ivory by washing them repeatedly with a warm, weak solution of gelatine, to which some transparent pigment, such as Indian yellow, with, perhaps, Mars yellow or burnt sienna, has been added. The so-called "metallization" process, by which they are made to look like old bronze, with a green patina, was for a long time a secret, and we do not know that it has ever been made public.

— EDS. AMERICAN ARCHITECT.]

THE WAGES OF MECHANICS IN THE LAST CENTURY.

PHILADELPHIA, PA., October 9, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, — I wish to procure for comparison with present prices — which I have — the wages paid skilled mechanics in this country about 1750 to 1800, and again before the entire decline of the apprentice system. If you can suggest any means whereby I can find these figures, I shall be greatly indebted to you.

Very sincerely,

MINERVA P

MINERVA PARKER NICHOLS.

[Probably the library of some Historical Society would be the best place to look for documents of the sort. We published, a few years ago, some notes of the cost of building-materials and labor, at the beginning of the present century, taken from some old family papers of our own; and such papers would form the most authentic source of such information. Some of the gossipy town and family histories, many of which are to be found in any large library, would be likely to contain copies of similar documents.

— Eds. American Architect.]

WIRING FOR ELECTRIC-LIGHTING FOR BUILDINGS.

OGDENSBURG, N. Y., October 9, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, — Can you tell me of any work from which I can gain such information necessary for specifying intelligently for the installation of wiring for electric-lighting for buildings.

Very respectfully yours, WILLIAMS & JOHNSTON.

Very respectfully yours, WILLIAMS & JOHNSTON.

'The best elementary book on electric work in general, that we know, is Philip Atkenson's "Elements of Dynamic Electricity," published by the D. Van Nostrand Co., New York. No book, however, would enable an architect to specify with precision all the parts of a system of wiring, unless he were to keep himself familiar, also, with the improvements which are constantly being made in wires, conduits, switches, cut-outs, meters, lamps, etc. The papers which are in course of publication in this Journal will, we hope, furnish a good deal of information of this sort. The Interior Conduit Insulation Co., of New York, publishes, and will send to architects on request, a specification for electric wiring, which is very incomplete, but may furnish some useful suggestions; and the Underwriters' Associations in most of our large cities print sets of rules to be observed in electric installations, which are particularly useful for consultation, as the building will not be insured unless they are observed. If the architect desires to go more deeply into the subject, he should study, in addition to the more elementary works, Professor S. P. Thomson's book on "Dynamo-Electric Machines," and provide himself with some book of tables, like Kempe's "Electrical Engineer's Pocket-book," or Walker's "Tables for the Electrical Engineer," unless he wishes to work out all the sizes of wire for himself.—Eds, American Architect.]



Boston, Mass. — Exhibition of the Works of Adolf Menzel; also, Drawings by John Trumbull: at the Museum of Fine Arts, in October and November.

BRIDGEFORT, CONN. — Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery, September 8 to October 27.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.

NEW YORK, N. Y. — Loan Exhibition of Portraits of American Women: at the National Academy of Design, opens November 1.

Second Annual Summer Exhibition of American Paintings: at the Second Annual Summer Exhibition: at the Metropolitan Museum

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum

of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

PHILADELPHIA, PA. - Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

St. Louis, Mo. - Paintings: at the Exposition, closes October 20.



STOWE HOUSE.—Stowe has more history than is generally to be hired with a country house. It stands upon land once owned by the Abbey of Oseney. At the Dissolution, the abbot conformed to the new order, and, for his reward, received as his own, the manor which he had before held for his community. Later, he was made the first Bishop of Oxford, and resigned the lands to his friend, the Crown, when they were granted to Peter Temple, one of whose sons was the ancestor of the Temples of Stowe, and another the forefather of the Viscounts Palmerston. A descendent of the first was created Viscount Cobham—the Cobham of Pope—with remainder to his sister Hester, wife of Richard Grenville. She was the mother of the first Earl Temple, and ancestress of the Dukes of Buckingham; her only daughter became the wife of Chatham and the mother of Pitt. Peter Temple built a house at Stowe, in the time of Elizabeth, and rebuildings and additions followed until the death of the first Marquis of Buckingham in 1779, when Stowe reached its final stage of splendor. The front, including the wings, measures 916 feet, and the gardens cover 400 acres, and are gay with lakes and dismal with grottos, caverns and temples, exactly like the more exalted parks laid out by the trained imagination of Miss Austen. A monument to Congreve stands there also, and in its best days the house contained a famous library and art collection. But in spite of the rather over-confident motto of the family, "How beloved are thy temples!" misfortune came. The treasures were scattered, and Stowe gave a hired hearth to temporary dwellers, the latest being this dynasty of France. — Pall-Mall Gazette. STOWE HOUSE. — Stowe has more history than is generally to be ired with a country house. It stands upon land once owned by the

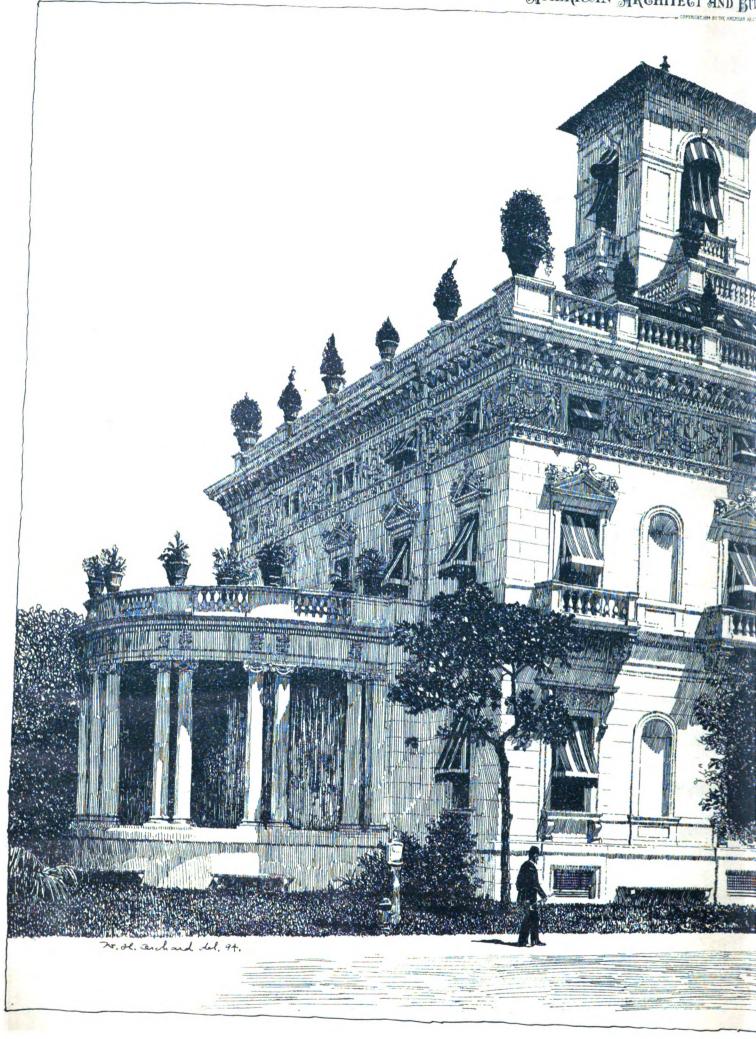
Visitors to the Washington Monument. — The list of visitors to the Washington Monument has touched the million mark. The column has been open to the public a little less than six years. The date of the opening was October 9, 1888. In less than six years one million men, women and children have gone to the top of the great column and looked out over the city from the little square windows which give so fine a view of the surrounding country. Most of these have gone in the slow-moving elevator. Some hundreds of thousands, though, have tortuously climbed the thousand stairs which wind about the elevator-shaft with long landings at every ten feet of elevation. It is not an evidence of crankiness to be seen climbing these stairs. A great many people of more than average intelligence make the ascent in this way every day, partly for the novelty of the experience and partly for the better view afforded of the memorial tablets which decorate the interior of the shaft on every side. A great many of the people who climb up take the elevator to come down. Their knees are very apt to give way under them if they attempt the descent by the stairway. Originally all visitors went up on foot, for Congress for a time refused to appropriate money to run the elevator. — Boston Transcript.

Earthquake Effects on Brick Buildings.—A letter of Messrs. Ende and Boeckmann, of Berlin, to our contemporary, the Deutsche Bauzeitung, gives us some interesting particulars of the effects of the late earthquakes on the new public buildings these architects have erected at Tokio. We refer to the earthquake that passed over Japan on June 20 last. It seems that the shock lasted no less than four minutes and fifty seconds, and that the buildings rolled perceptibly. Whilst all the other brick buildings suffered badly, Messrs. Ende and Boeckmann's blocks apparently withstood the shocks without showing a crack. This escape seems to have been mainly due to the precaution of tying in all the brickwork with iron bands, both horizontally and vertically, no part of the building being omitted; and, further, in building the exterior slightly inclined inwards. The walls are built unusually thick. The designs purposely showed no gables, and in vaulting very narrow spans were arranged for. On referring to official information regarding the earthquake we hear that at Tokio and Yokohama together no less than 4,551 buildings were damaged, and that sixty-one persons were killed and 428 hurt by falling houses. Thirty-two buildings collapsed completely, and eighty-one were practically razed; five bridges gave way. Of course, the majority of these buildings were of native construction, but these, as usual, apparently withstood the shock far better than the average "European" structure.—

The Builder. EARTHQUAKE EFFECTS ON BRICK BUILDINGS. - A letter of Messrs.

Reported Sale of the Eiffel Tower. — A Baltimore newspaper prints a story that a syndicate of Baltimore capitalists has bought the Eiffel Tower, and that the immense iron and steel structure will be brought to Baltimore. The promoters of the Baltimore Centennial Celebration, which is to be held in 1897, are said to be the purchasers of the tower, and the cost, together with that of taking apart and transporting the 7,000 tons of metal of which it is constructed, is said to be about \$550,000. The French Directors of the Paris Exposition, to be held in 1900, agreed about two weeks ago, it is said, to dispense with the tower. They instructed their architects to devise plans for the exposition buildings without reference to the tower. This decision was reached, it is said, as a consequence of the negotiations between the Baltimore capitalists and the French exposition authorities. — N. Y. Times.

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NEW YORK STA



TATE BUILDING.

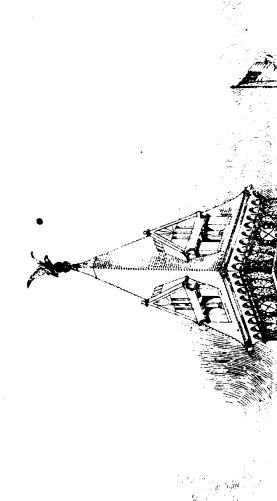
BITION, CHICAGO, ILLINOIS.

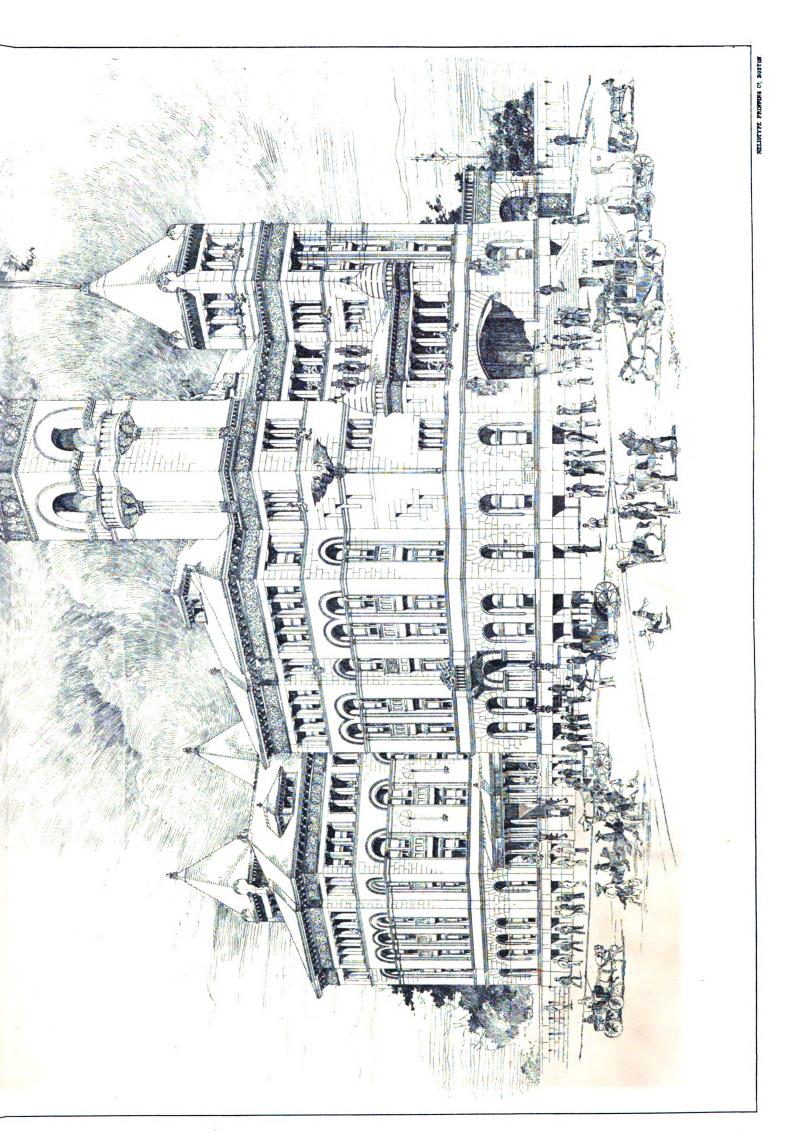
WHITE, Architects.

HELIOTYPE PRINTING C!, BOSTOR

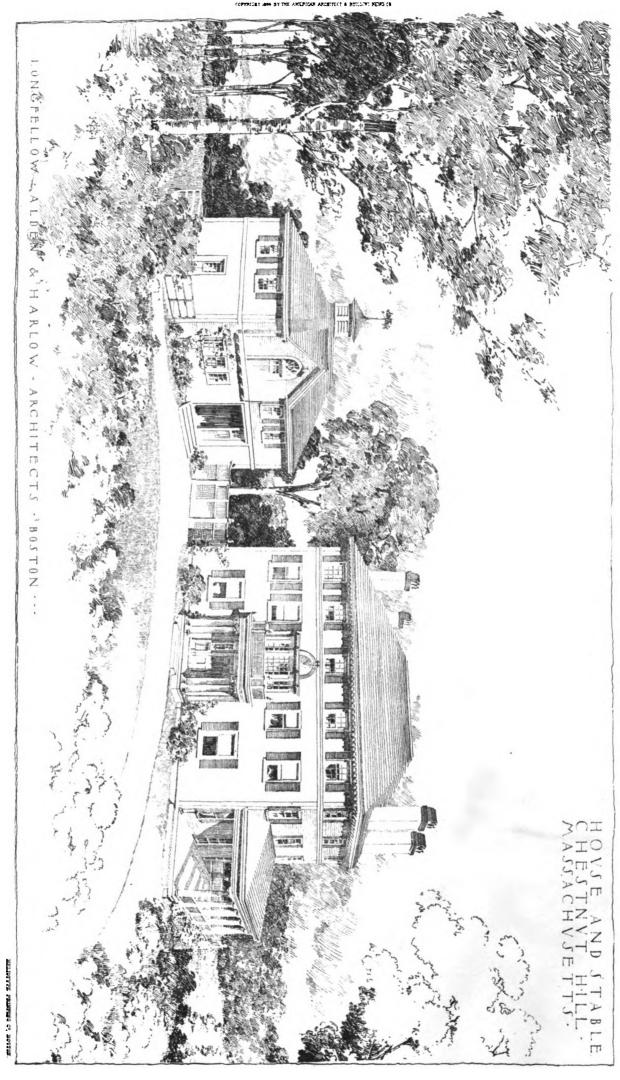


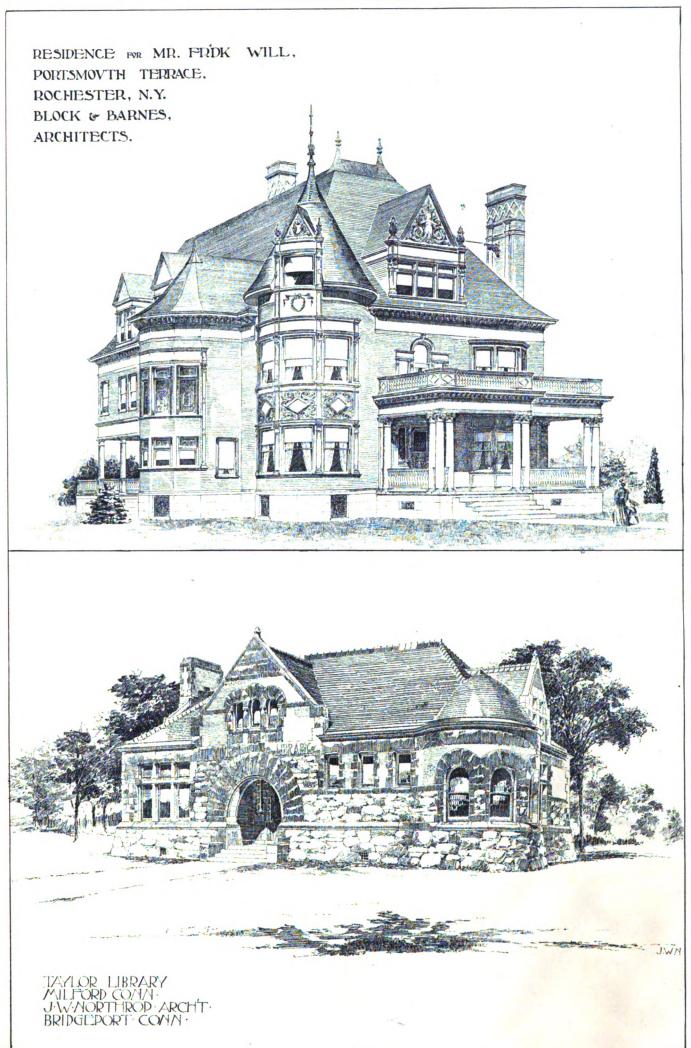
ACCEPTE CONFESSIONED DESIGNA-BEXAR COUNTY COURT HOUSE JAMES RIELY CORDON ARCHIESTS SAN ANTONIO TEVES ** * *





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OCTOBER 27, 1894.



Summary:—

The American Institute of Architects a truly Representative
Body.—The Water-supply of Lawrence, Mass.—The Efficiency of the Filter-bed in controlling Epidemics.—Sandwell Foundations used for the Law College at Madras.—The
Baroness Burdett-Coutts's Encounter with a Trade Union.—
M. Yves-Guyot and "Organized Labor."—M. Koitzow's
Phonograph.—The Practical Usefulness of the Phonograph.
—The Trolley-wire at Havre, France.—World's Fairs.—
Cryptographic Photography.

Electric Elevators.

The Twenty-eighth Annual Convention of the American
Institute of Architects.—II.

Annual Address of the President of the American Institute of Architects.—VII.

Italian Villas.

Societies.

Illustrations:—

Staircase in the Main Court of the Criminal Courts Building,
Corner Centre and Franklin Streets, New York, N. Y.—
Attempt at Different Styles of Rendering.—House at Baddeck, C. B.—Doorway of Arnold's Mansion, Fairmount
Park, Philadelphia, Pa.—Proposed Armory for Troop A,
N. G. S. N. Y.

Additional: The Marine Café, World's Columbian Exhibition,
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New Offices, Leadenhall Street, London, E. C, Eng.—Hill
Wootton, Warwickshire, Eng.

Exhibitions.

Notes and Clippings.

Architects are not, as a rule, very stirring affairs, and it is by no means desirable that they should be, they represent the profession with fairness, and the dignity and good taste with which their proceedings are conducted reflects honor on the whole body of architects throughout the country. Looking back to the time when the Institute was organized, the subsequent growth of the profession in credit and influence is something extraordinary, and every one must acknowledge that the Institute has had a large part in this development. What share it may have in the future history of architects and architecture in this country remains to be seen, but it certainly shows no signs at present of any probable failure to represent and defend professional interests, complex as these have grown to be.

An interesting improvement has been made in the water-supply of the city of Lawrence, Mass. This city, which has a population of about fifty thousand, takes its water-supply from the Merrimac River, at a point nine miles below the outfall of the sewers of the still larger city of Lowell. The practice of pumping up the sewage of one town, for the inhabitants of another town to drink, had produced its natural result, in the shape of endemic typhoid fever, until the Massachusetts State Board of Health, or rather, we suppose, Mr. H. F. Mills, the Chairman of the Committee of the Board on Water-supply and Drainage, who is, or has been, a resident of Lawrence, took the matter in hand, and Mr. Mills designed a sand filter, for the purpose of filtering the Merrimac water before it was pumped up to the city reservoir. The experiments of Mr. Mills and his associates in the cultivation and isolation of the bacteria of nitrification are already famous, and the knowledge of the conditions of filtration and purification gained at the Lawrence Experiment Station of the Board of Health have undoubtedly been utilized for the benefit of the citizens.

R. MILLS'S filtering field is about two and one-half acres in area, and is covered with sand to an average depth of about four and one-half feet. The field borders the Merrimac River, and is separated from it by an embankment. Water from the river is allowed to run over it for about sixteen hours each day. The water-gates are then shut, and for the remaining eight hours the sand is allowed to drain itself, the pores becoming filled with air as the water sinks away. At the bottom of the sand are laid under drains, by

which the water is collected and conveyed to a pump well, and is thence pumped to the distributing reservoir, which is open From the distributing reservoir it passes by gravitation into the city mains. Two million gallons per day are taken from the river, filtered, and pumped into the reservoir. Very severe tests, made by throwing on an experimental filter-bed of this sort bacteria, similar to the typhoid bacillus, cultivated for the purpose, showed that, with a depth of sand equal to that used in the city filter-bed, ninety-nine and eightyone one-hundredths, on an average, of the bacilli thrown on the filter were removed by the filtration. As the proportion of bacilli in the culture-liquid applied to the filter corresponded to what would be the character of the Merrimac water at Lawrence if all the inhabitants of Lowell should have typhoid fever at once, the filtration test was certainly exacting enough to satisfy all doubts; and the practical trial of the filter-bed, under actual conditions, for the past year, has fully borne out the expectations of its designer. During the five years preceding the use of the filter-bed, the average annual number of deaths from typhoid fever in Lawrence was sixty-three. During the past year, although a severe epidemic of typhoid fever has raged in Lowell, there have been only twenty-six deaths from the disease in Lawrence. Moreover, of those who died, twelve were mill-operatives who were known to have drunk water from the mill-canals, instead of the purified water from the city mains, and it is reasonable to suppose that some of the other cases were of foreign origin; so that the sand filter-beds may fairly be said to have already almost extirpated typhoid fever from Lawrence. This interesting account we gather from a paper read at the meeting of the American Public Association, held at Montreal last month, by Mr. George W. Fuller, Biologist in charge of the Lawrence Experiment Station of the Massachusetts State Board of Health; which, we hope, will be attentively studied in a good many places outside of Massachusetts. To say nothing of Paris, with its chronic typhoid-fever epidemic, Philadelphia, Savannah, Jersey City, Newark, and a host of smaller places, suffer greatly from the filthiness of their drinking-water; and if so simple a process can effect for their inhabitants what it has for the people of Lawrence, it should be adopted without a moment's delay.

INDIAN ENGINEERING gives an account of the laying of the foundations of the new Law College, at Madras. The building stands on a foundation of black mud, fourteen feet deep, overlying sand, the level of the ground water being six feet below the surface. To get a suitable foundation, about four hundred wells were dug, mostly by native well-diggers, and filled with sand, and over these a sheet of concrete, four-and-one-half feet thick, was spread. As the water stood eight feet above the sand, it was necessary to curb the wells, which was done, after a familiar manner, by laying a ring of plank, building four feet of brick wall on it, excavating under it, so as to let it sink, and then building four feet more of brickwork, and so on until the well had descended far enough. Octagonal wells were found the cheapest and best, as they could be sunk close together, and yet resisted efficiently the pressure of the ground.

ADY BURDETT-COUTTS has had a small encounter with the trades-unions, which had the result of eliciting from her an expression of opinion on the subject of personal liberty which is worth quoting. It seems that two of the stable-hands employed by her were set at work to paint the stables in their The English seem to find in their lords and princes a sufficient substitute for the walking-delegates of our more favored country; so it was the Secretary of the Painters' Union who addressed to Lady Burdett-Coutts a letter, remonstrating against stable-men being allowed to do painters' work. The Baroness, who, besides being one of the most amiable and charitable persons in Europe, has a mind of her own, replied to the letter, saying, among other things, "That you, or your society, if you write under its direction, should in effect assert a jurisdiction interfering with other working-men outside your trade, and endeavor to hinder them in the exercise of praiseworthy industry, and the effort to better their position by such labor as they are glad to undertake, and fortunate to find, is, to my mind, a monstrous and intolerable oppression. It would deprive every working-man and woman in the country of the

right to work out their own advancement by their own energy, and it would rob them of what the good old Radical principles in which I was brought up taught me to cherish through life — that birthright of personal liberty, under the law, inherent in every Englishman, inalienable by king or commoner."

E almost tremble as we read these bold words. In England, as here, every election day sees the whole herd of politicians, of both great parties, galloping on their hands and knees to see who shall be the first to lick the feet of "Organized Labor"; and, although the penalty for offending the walking-delegates is not there, as it is here, starvation or assassination, the union officials are able to make anybody very uncomfortable who dares to mention Liberty in their presence. In France, where the goddess is worshipped sincerely, if, at times, rather eccentrically, a strong party, under the lead of M. Yves-Guyot, is beginning to question whether a social order in which the privilege of working for a living is confined to the members of certain organizations constitutes the highest ideal of human freedom; but in England and this country no one of any political distinction has been found bold enough to stand up against the unions, although, among us, men of the stamp of the regretted Colonel Auchmuty, and, to their honor be it said, most of the judges before whom the question has been laid, have defended bravely the good old principles of freedom; and if Lady Burdett-Coutts, or her accomplished American husband, should take a fancy to do something to resuscitate the Anglo-Saxon birthright, they can find plenty of inspiration by inquiring into the experiences of the "scabs" in their encounters with "organized labor."

NEW sort of phonograph, invented by M. Koitzow, is described in the Revue Industrielle. Like all phonographs, the new machine is extremely simple. As in the Edison phonograph, a cylinder is used, mounted in journals, and actuated by clockwork, but, instead of the wax covering of the Edison phonograph, M. Koitzow uses a hard kind of soap, cast in brass moulds. The soap has the advantage of retaining the impression longer than wax, and of not being subject to softening in hot weather. The sound to be impressed on the cylinder is recorded by a sort of ear-trumpet, of hard rubber, and the impression is reconverted into sound by means of a lever, with arms of unequal length, the short arm of which carries a point, in contact with the cylinder, while the other is attached to the membrane, the vibrations of which reproduce When the the sound. The soap cylinders last a long time. surface is covered with impressions, it may be washed off, and a fresh surface exposed. The impression need not be more than a thousandth of an inch in depth, so that one cylinder can be used to receive and transmit two hundred and fifty thousand words.

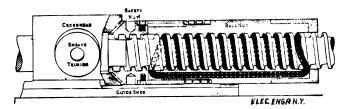
OR many reasons, it is to be desired that the phonograph should be developed into an instance. should be developed into an instrument of practical utility, and any improvement is to be welcomed that will make it To say nothing of the moral effect that would be produced on people by having their own hasty words preserved and repeated to them, by the unerring cylinder, such a machine would be of great use in business. Some very rich men keep a stenographer concealed behind a screen in their offices, within hearing of what may be said to them, or what they may say in reply; and their conversations with strangers are reported and the notes preserved, for use in case of attempts to pervert such conversations for blackmailing purposes. Where it is inconvenient to employ a special stenographer, a good and silentlyacting phonograph would make an excellent substitute, and its testimony might, in many cases, effectively frustrate the schemes of knaves. In fact, so dramatic might be the effect of the unexpected reproduction, in court, of a dialogue which one of the parties thought had taken place without witnesses, in the trial, perhaps, of a probate case, or of an action for breach of promise of marriage, or for some great and well-concealed fraud, that we have often wondered why some playwright did not introduce a phonograph in the most exciting scene of a realistic drama. It would not be easy to imagine an effect more novel and absorbing than that which might be secured by bringing the wily villain of the piece triumphantly to the last act, showing him there victorious and exultant in the middle of his fellow rascals, while unfortunate virtue sobbed in the background, and, just as woe had nearly overwhelmed the audience, having the junior counsel for the defendant, (in love with the oppressed heroine), arrive with a little box under his arm, and elicit from it, by turning the crank, a series of buzzings and squawks, on hearing which the villain should turn pale, pull from his pocket bundles of stocks, bonds, "title-deeds" and so on, fling them at the heroine's feet, and seek safety in flight with his companions, only to be caught and dragged cursing back by the police, while the good people joined hands all around, uttering, as the curtain fell, the inarticulate murmurs expressive of virtuous joy.

YO much is said about the advantages enjoyed by foreign cities in not having their streets encumbered by electric wires that it is interesting to note that the city of Havre has just been furnished with an extensive network of electric railways, constructed and equipped by the Thomson-Houston Company, using the trolley-wire system which that Company has made so familiar here. In the Havre railway, while five hundred and sixty posts are used to carry the wires, the latter are, in many cases, supported from rosettes, bolted to the walls of the houses. There is probably no real danger in this arrangement, but we doubt whether it would be tolerated in any American city, notwithstanding our reputed carelessness in such matters. In the widest streets, the posts are surrounded by the little "refuges" which form so excellent a feature of French street-engineering, and many of them carry arc-lamps. The effect of these is very good, and the posts are found to make good supports for them, so that all the streets through which the electric roads run are likely to be, in the end, lighted in this way.

ANY years ago, the example of an international exhibition of manufactures and industries was set, by the successful carrying out of the World's Fair in London. It was not long before the example was imitated in Paris, and shortly afterward, the exhibition in, what would now seem the little, Crystal Palace in New York made a creditable beginning for the series of American undertakings of the kind. Another World's Fair in Paris, and one in Vienna, followed by the Centennial Exhibition in Philadelphia, brought the fever to its culmination, and it began to decline. France, which carries the financial analysis of such enterprises to great detail, found it profitable to continue the series, at intervals of about eleven years; but, with these exceptions, and that of the Chicago Fair, the great exhibitions of the past twenty years have been mostly local, or devoted to specialties, like the great Electrical Exhibition at Frankfort, and the Colonial and Fisheries Exhibitions in London. Now, notwithstanding the oft-repeated demonstrations of the pecuniary unprofitableness of general fairs, the fever for them seems to have set in once more. France is already arranging for one on an immense scale, to be held in Paris in 1900; Berlin is to have one in 1896; Japan has one in 1895, and smaller ones are announced in various

THE British Journal of Photography gives a description of a process which is cortain. cases, be of value to the architect who does not care to show his photographic memoranda to all the world. A sheet of ordinary white, unsized printing-paper, or blotting-paper, is to be immersed in a liquid made by dissolving twenty grains of gelatine in an ounce of water. When the paper is thoroughly saturated, it is to be hung up to dry. After thorough drying, it is to be floated for three or four minutes on a mixture of one part saturated solution of bichromate of potash to two parts water, and again dried. The paper is now sensitive to light, and must be kept in a dark place. By exposure to the sun under a negative, for a sufficient time, a brownish print is produced, which is first to be soaked in cold water, until the unaltered bichromate of potash is dissolved out, and then in warm water, which removes all the gelatine that has not been rendered insoluble by the combined action of bichromate of potash and light. On the completion of this operation, the picture is still visible, in a faint, brown color, but, by immersion in a solution of sulphurous acid, this color is bleached out, and, on drying, the paper appears perfectly white all over, without the faintest trace of an image. In order, however, to bring out the image, all that is necessary is to immerse the paper in what the *British Journal* calls "hydroxyl monohydride," in other words, clean water, whereupon the picture plainly appears, in white on a dark ground. On drying, it disappears again, and the process may be repeated as often as

ELECTRIC ELEVATORS.1



HE designing of a modern office-building has become quite as much a question of engineering and mechanics as of architecture. This fact may be unfortunate from an æsthetic point. of-view, but it is one which, however reluctantly, must be accepted by the architect of to-day. The change in the character of the buildings, the decreasing ratio of ground-dimensions to height, the new character of foundations, the introduction of steel framing, the great advances made in machinery, the increasing demands of tenants, the cost of maintaining an adequate building-service, the lowering in return on investments, all are forcing the architect to give more and more attention, not only to the engineering problems involved in construction, but to the various problems relating to the service of a building in all the variety of present practice and

That many advances have been possible and are being made is evident. Roof-tanks are disappearing, gas is eliminated, compound direct coupled engines and dynamos are making obsolete for these purposes slow-moving engines, shafting and belts, and steam-pressures are being raised.

Provision for one service, however, and perhaps now become the most important, has always handicapped the architect, who has until recently been at the mercy of the hydraulic elevator, not so much in the matter of cost, but in the internal arrangements of the building as well as in the lay-out of the basement, neither of which could be finally and satisfactorily determined, until the particular type of machine had been accepted by the owner, and the contract finally made for it, if even then.

Nor has there been either singleness of design or unity of plan of operation. Each maker has had his own form of construction, his special method of control. Every building has brought up a problem more or less new or, at least, conditions which had to be seriously considered in determining the elevator-service. Horizontal and vertical machines in becoment or shaft high or low multiplication. vertical machines in basement or shaft, high or low multiplications, vertical machines in basement or shaft, high or low multiplications, long and short, single and jointed cylinders, big and little diameters, large and small sheaves, free and suspended counterweights, pulling and pushing machines, direct and differential pistons, roof-tanks, stand-pipes, accumulators and compression-tanks, high and low pressures, hand-rope, wheel or pilot-valve control, simple or compound pumps, all have made a nightmare of complications giving more initial and continuing source of complaint and dispute than all other engineering questions.

other engineering questions.

Feeling the pressure of these facts, and believing the natural tendency was to consolidate power-generation as completely as possible into like units, at the time of planning the Postal Telegraph Building, I turned to electricity for emancipation, in the hope of being untrammelled in my arrangement of the building, and received the very natural support of the President of the Postal Telegraph Company, who was desirous of having the service of the building, as much as possible, electric.

Half a decade has seen the trolley-system become preëminent, triple electric-motor cranes succeed square-shaft and wire-rope trans-

triple electric-motor cranes succeed square-shaft and wire-rope transmission, distributed stationary motors, supplied from a central station, in point of convenience and economy distancing every other

form of transmission of energy for mill-work.

Electric elevators were not exactly a novelty, but as applied to fast passenger work they were unknown. The character of the Postal Telegraph Building, and the personnel and ambitions of the building-committee were such as to warrant the most careful investigation into the possibilities of electric-elevator service and the history of its development.

It seems that for about ten years electric-motors have been used in one form or another for elevators. Among the earliest applications in this country were the driving of ordinary worm or spur gear freight-elevators by cross-belts from a counter-shaft, which was, in turn, driven by a constant-speed electric-motor, as, for example, at the Pemberton Mills, Lawrence, Mass., in 1884, by Mr. Frank J. Sprague (reference to which was made by Edward Atkinson in one of this increases circulars) and shartly of counter that the constant is the constant of the counter of the coun of his insurance circulars) and shortly afterwards by the same inventor in New York City. This sort of application marked the limit of advance until some four or five years after, when the use of motors directly geared to street-car axles and run in reverse directions with fixed brushes had been demonstrated to be a success. The next step then, naturally, was to attach to the driving-shaft of a worm or spur gear elevator a motor armature, and to operate it without any intermediate devices. This form has now become a standard for certain classes of work, but it is not recognized by any company as doing more than replacing by a much more convenient apparatus, especially when supplied from the street system, the

A paper read at the Twenty-eighth Annual Convention of the American Institute of Architects by George Edward Harding, Architect, on October 17, 1894.

steam-machine of like type. They are not, and never have been, recognized as applicable to first-class passenger service, because of the low efficiency of the sliding friction, the limited number of ropes which can be used, shifting of the lead of the ropes, the liability the ropes jumping the grooves, the high speed of the screw, and the consequent limited capacity and speed of the car.

Four or five years ago, Mr. Charles R. Pratt made an experi-

ment at the Tremont House in Boston, in which he adopted the sheave movement of the hydraulic horizontal elevator, driving the crosshead with an ordinary nut and screw revolved by a motor. the crossnead with an ordinary nut and screw revolved by a motor. The experiment itself was not a success, but there was the germ of the future elevator in it, which was subsequently taken up by Mr. Sprague, in connection with Mr. Pratt, and by the application of certain specific mechanical features, and by bringing to bear upon the problem the knowledge which Mr. Sprague had acquired as a pioneer of the trolley system, a type of machine has been developed which, in my opinion, will replace the hydraulic elevator.

Just here I may point out that there is a natural division in ele-

Just here I may point out that there is a natural division in elevator service which will of itself make distinctive the type of elevators vator service which will of itself make distinctive the type of elevators used, and that is the required rate of speed. So long as a car is to make a maximum of 250 feet a minute, there is no particular necessity of being able to run it at variable speeds, and it can be stopped under either a dynamic or mechanical brake. Such a machine does not represent battery work, but is more for isolated service. When, however, speeds from 300 feet to 600 feet a minute are required, it becomes vital that there shall be absolute control of the speed of the car by the motor, independent of the brake, and that it should be able to be run at variable speed, not alone for comfort and accuracy in starting and stopping, but for the satisfactory operation of a battery of elevators on schedule time, in other words, to meet the conditions of office practice.

This division, it seems to me, fixes the uses of the drum elevator for what may be termed "second-class" and "isolated" service. It makes necessary a distinct type of high-class service.

It is some satisfaction to recall the fact that some twenty years ago, while the junior partner of Arthur Gilman, I advocated the hydraulic elevator in a plant at the Westmoreland apartment-house, and stated to Mr. Otis that the hydraulic machine would replace the steam machine then favored by him. I was met at the time with ridicule, but only a short interval elapsed before active steps were taken by him in the direction of hydraulic elevators with results now familiar.

In recent years, however, we advance more rapidly, and I unhesitatingly assert from the experience which I have had in the past year that the hydraulic elevator has finally met its rival, that it is a passing system, and that in the comparatively near future the electric elevator for the highest class of service will prove as much of an advance over the hydraulic as the latter has proved better than the steam machine. I feel warranted in making this declaration, for steam machine. I feel warranted in making this declaration, for having taken in a large measure the responsibility of the decision in favor of electric elevators in a building where a mistake would not only have seriously injured my clients, but inflicted a blow on myself, of the very gravest character, a decision which met ridicule and disbelief. I have had an unequalled opportunity for seeing under every possible condition of hard service and adverse circumstances the development of this type of elevator.

development of this type of elevator.

Previous to the time when the question of elevators was to be finally determined at the Postal Telegraph Building, my attention had been called to an experimental machine which was being developed by Mr. Sprague. This experiment, by reason of his professional standing, and because of my engineering experience, attracted more attention than I would ordinarily have given it, and seemed to promise the solution of many grave difficulties. A favorable opinion was arrived at by the building-committee, and when Mr. Sprague offered to put in a perfectly satisfactory elevator-service under a heavy daily penalty, with an agreement, while still under penalty, to replace the plant by any selected hydraulic-elevator system in case replace the plant by any selected hydraulic-elevator system in case the electric results were not satisfactory, it was decided to give him the contract, as much, perhaps, on his past record as a successful electrical engineer, as for what he had already accomplished in this particular adaptation to elevator service.

The result has verified the wisdom of our decision, for Mr.

Sprague has developed a system which is running most satisfactorily on one of the most continuous services in any city. He has proved, first of all, that the machine is absolutely safe, and that by most first of all, that the machine is absolutely safe, and that by most unusual tests. It occupies less room, and does not require the cutting up of the building with consequent loss of space. It has tremendous lifting capacity, and any required speed. The motion is true and the usual unpleasant features of starting and stopping are eliminated. Like parts of the machine are interchangeable. The current can be taken from the street or from a private plant. It has materially aided in the completion of the building, having been put into operation at an early date. Finally, the coal consumption is certainly not over one-half and I think less than that, of the hydraulic-elevator system. Of this I will speak later.

It should be remembered that not one of the least advantages of an electric system, considered from the standpoint of the builder and

an electric system, considered from the standpoint of the builder and the owner, is the fact that every machine is an independent unit, and if there is a street supply, any machine can be put into operation as soon as its hoistway is ready, facilitating in a marked degree the early completion and occupancy of a building.

One of the most remarkable examples of the ease of installation is

the record just made at McCoy Hall in Baltimore, where two machines were put into operation three days after their delivery, the power being supplied from a station a mile-and-a-half away. Another example illustrating the accessibility of a machine was the slinging of a car at any point of the hoistway, and taking off of the ropes and general dismantling of the hoisting machine, its restoration and the putting of the car into operation in considerably less than an hour. The fact that a car can be slung by its ropes at any point of the hoistway, and the multiplying machine relieved from all strain so as to be entirely free for any repair by one man in ten minutes, is suggestive.

GENERAL DESCRIPTION.

The machine may be described as the combination of two old with one new element, with its specific safeties and methods of control. Briefly, it is of the horizontal multiple-sheave type with a travelling crosshead and frictionless nut driven by a screw revolved by a motor directly connected and governed by a pilot motor and rheostat.

The general construction consists of a heavy main beam carrying

The general construction consists of a heavy main beam carrying the travelling crosshead and lower screw-bearing, with special castings bolted at each end, one carrying the fixed set of sheaves and the other the thrust-bearing, brake and motor. The regulating apparatus is independent and self-contained, and is placed on the wall. From the car to the system of multiplying sheaves, this machine and the horizontal hydraulic elevator are practically the same. The crosshead, however, marks the point of departure in the two types.

In the hydraulic machine this crosshead is rigidly attached to the end of a rod which terminates in a piston moving in a cylinder having an inside length equal to the lineal movement of the crosshead. This cylinder in the vertical type of hydraulic, varies from thirty to fifty-five feet in length, with from two to ten sheave multiplications, and in the horizontal types the multiplication runs as high as fourteen, with corresponding diminution of length of cylinder and increase in cross-section. Whatever the gearing, however, the length of cylinder is a function of the car travel. In this electric

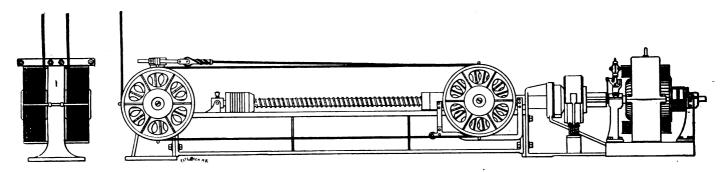
most compact machine, but the greatest life of ropes and the best counterweight results. In this indirect system, there is a division of multiplication which, while having the same effect so far as speed of car and length of machine is concerned as a high direct multiplication, has an entirely different result in the wear on the ropes and the amount of counterweight which can be carried without jumping. This is accomplished by making one-half the multiplication (six, eight or ten) on the machine; the ropes, properly proportioned, going thence to the bottom of the counterweight frame, which has a single multiplying sheave on top. The car-ropes go over the shaft-sheaves, under the counterweight multiplier, and back, up to the top of the hoistway, where they are anchored, giving a car-speed twice that of the counterweight; the equalizing chains, used to make the pull of the car with any given load constant at all points of the hoistway, are fastened to the bottom of the counterweight frame and anchored in the hoistway. The space occupied by this multiplier is only two or three inches more than by ordinary form of counterweight. A larger screw, fewer revolutions, and sheaves of greater diameter characterize this type of multiplying machine. This system seems to be the best yet devised for long rises, for not only do all the car ropes do equal duty, both with relation to the hoisting-strain and the counterweight, but the rope wear must be less because of the division of speed and multiplication, the necessity of changing only one-half of the ropes at a time, and the possibility of reversal of the ropes on the multiplying machine to get a new wear.

DETAILS

Turning now to the detail construction and operation of this machine, there are a number of features claiming special attention, each unique in character and marking a radical departure from all other elevator practice. These are the nut, screw and thrust bearing, the brake, the motor and the regulator apparatus.

other elevator practice. These are the nut, screw and thrust bearing, the brake, the motor and the regulator apparatus.

One of the most interesting as well as important features, and perhaps the one which has been most frequently attacked, is the nut system. It joins the crosshead of the travelling sheaves by a conical seat. There is no fastening between the nut and the crosshead, the



elevator, the crosshead being moved along a screw, stationary so far as lineal movement is concerned, there is, with any given number of sheaves, only one variable—the length of screw, and, for all heights above about ninety feet, the electric machine has an advantage in matter of length which, with increased rises, becomes of great importance.

importance.

Looking to the future need of office-buildings, and with a foresight for which architects may be thankful, there has been adopted two methods of rope multiplication, determined by the height of building, and so selected that the length of machine overal shall not exceed about thirty feet for rises as high even as three hundred feet actual car-travel. From this the length grades down to about twenty-one feet, so that all rises between sixty and three hundred feet can be taken care of with an extreme variation of nine feet in the length of machine, and there is thus provided limiting dimension data of great convenience and utility.

These systems of multiplication I may term direct and indirect. In the former, the entire multiplication, varying from six to twelve, is done at the machine, and the ropes lead from the end sheaves over the shaft sheaves direct to the car. A free counterweight is used, the ropes being fastened to the car frame. In this method, which is that common to all horizontal and to many vertical hydraulic machines, the hoisting and counterweight ropes have unequal duty; furthermore, the ropes having the maximum bending travel on the outboard sheaves at the same speed as the car. This last is the case, also, with all vertical hydraulics. In some of the latter the counterweight is carried in the cylinder on the piston, or in the strap, or both, its weight being as many times that of a free counterweight as there are multiplications. Sometimes both methods are used.

Economy of operation and smoothness of movement, however, are antagonistic in their relations to the amount of counterweight carried. The best method is probably that used when there is a single multiplication in the shaft, giving a two-to-one counterweight travelling at half-speed and carried by all the car-hoisting ropes, as is done for short-rise vertical hydraulic elevators.

Mr. Sprague has adopted for long rises what I think is a very happy combination practice, and one destined not alone to give the

continual weight of the car always keeping them in contact, and the friction at this point, being greater than between the nut and the screw, enables the latter to transmit a straight line movement to the crosshead when the screw is revolved by the motor, and also to revolve the screw and drive the motor as a dynamo when the mechanical brake releases the screw to allow the car to descend. These are the normal functions of hoisting and lowering. There are several other distinct functions of this nut which will be described in considering the "safeties."

Continuing the "safeties."

Continuing the line of transmission of power, the only points of contact between the interlocking nut and screw are by a chain of balls which occupy a number of threads, and enter and leave the ends of the nut through tubes which are connected together so as to make a continuous conduit. This is one of the most vital points of the elevator apparatus, and herein lies one of the most potent reasons of its success, the reduction of friction by rolling instead of sliding surfaces on almost all parts under pressure, for not only is the nut so constituted, being in fact a developed spiral thrust-bearing, but the thrust-bearing at the motor end of the screw is taken on balls and the sheaves are carried on ball or roller bearings. This nut being a vital part, its development has been most thorough, and a peculiar treatment of steel which has been adopted renders its surface so hard that the wear is very small, and is well within commercial limits. So free is the machine from static friction that it is possible to start the car with a very slight increase of current over the normal hoisting current, provided time be taken so that the work done in acceleration is small to the work of lifting. The balls have an average crushing strain of 25,000 pounds each, but the working pressure varies from only 50 to 125 pounds per ball. The nut system is a compound one, for besides the working-ball nut there is another, called the safety-nut, to which I will make reference later, keyed to it, and between the two is a powerful spring under compression. The screw is a forged bar of high carbon steel with a peculiarly shaped thread. It passes through the clearance hole in the steel trunnion crosshead which carries the travelling sheaves, then through the nut system, and is carried at the other end by a fixed bearing. At the inboard end it terminates in the thrust-bearing, where the pressure is taken by about 200 steel balls carried in a

bronze guide-plate and bearings by specially hardened steel discs. The thrust of the screw being thus taken up on the inboard end, the strain on the screw is invariably between that end and the travelling crosshead, never beyond this; hence, it is always under extension strain, never under compression. The action of the balls on the screw, which is untreated, is peculiar. They form a path for themselves, partly by wear, but principally by rolling compression of the steel, which finally becomes exceedingly hard, so hard that the edge of an ordinary machine tool would be turned.

By yound the thrust plates is known an incompanion or pullou connected by a

Beyond the thrust-plates is keyed an iron pulley connected by a flexible coupling with the motor shaft. The function of the brake is that of locking the screw when at rest, not by means of varying the speed. In case of accident it has the additional function of helping to stop the screw. It may be described as a compound electro-mechanical brake. The steel brake-band, wood-lined, is anchored at one end the hoisting side on the motor-bed frame, and the other end is continually pulled down by a powerful spring under compres-sion. The mechanical movement in opposition is through the medium of a peculiar magnet. It is operated by a dual circuit, one in hoisting, another in lowering. In the event of failure of current for any reason, or too high a speed on the down run, this magnet releases the brake (in the latter case by a snap switch operated by a Pickering centrifugal governor driven by the main screw), and the brake-band promptly grips the brake-wheel softly, yet powerfully.

The motor, which is of the multipolar type, is carried on the same sting which contains the thrust-bearing. The field magnets are of casting which contains the thrust-bearing.

upon the motor and multiplying machine, without reference to the means of communication between the car and the regulator, this last is a very simple device. It consists briefly of a rheostat made up of a number of peculiarly-shaped iron grids arranged in a circular form connected to copper contacts, over which passes a heavy carbon brush, and a coordinating switch, which, with one direction of movement of the rheostat-arm makes and maintains connection with the line and with the other breaks the line-circuit, and closes the ma-chine around itself. This same rheostat is used in hoisting and lowering. In the former operation, circuit having been made on the line, at first with a high resistance, this last is gradually cut out, the brake at the same time lifted and the torsional effort of the armature is increased until it exceeds the back effort of the car, when the latter moves upward with an acceleration depending on the rate of movement of the rheostat arm, and with a final velocity determined

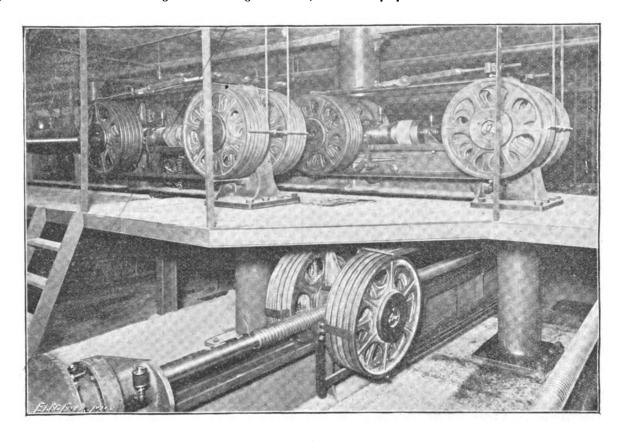
by the point at which the arm stops.

If, while hoisting, the current is for any reason cut off, the torsional effort ceases, the brake comes into action, and the car will stop.

In lowering, the brake is lifted by an independent circuit, but the armature is first short-circuited on itself, and becomes a most powerful dynamic brake. As the resistance of this circuit is increased, the car runs faster. Should it arrive at the lower limit of movement, an independent retarding circuit is established, and gradually reducing

the resistance, brings the car to the slowest movement.

The construction of the rheostat is such that there is no arcing on its face, and hence it is very durable. The final breaking of the circuit is by a very quick-acting switch, which is independent of the rheostat proper.



steel, and are excited by two circuits, one, known as the shunt circuit, being variable in strength, at will, so as to vary the maximum speed of the machine, and the other, a series circuit, which acts to strongly compound the field. This type of elevator is differentiated from all other electrics by the fact that the action is like that of the hydraulic, for it always acts against gravity. In hoisting, the motor takes current from the line, and the motor, rotating in an opposite direction, is driven as a dynamo by the weight of the car. A strong element of safety exists in the fact that the current in the field-coils is never reversed, and consequently the machine is never demagnetized. Hence, under certain conditions of the operation of the safeties, it has a power of self-excitation which is of importance. The armature which turns in this field is of the iron-clad type, and not liable to injury of any kind. It is connected to the screw by a split coupling which spans a space between the ends of the armature and the screw, of such dimensions that it is possible to remove the thrust-bearing after the coupling is taken off without disturbing the There is certainly nothing in this part of the machine that is not standard, and when it is considered that there are many more motors now built than steam engines, and that they run under the most varied conditions, no question can be raised as to the absolute reliability of this part of the apparatus.

REGULATOR.

Considered in its simplest form, and its connection with its action

CONTROL.

There are three methods of controlling the regulator from the car. The most easily understood, but what would not be satisfactory in present practice, is by a hand rope pulled by the operator to move the main switch, precisely as in the earlier hydraulics. Fast service, however, both in hydraulic, and electric elevators, has led to the use of a pilot valve or motor, with a time limit, which can be operated either electrically or by hand. In the former case there are two practices: the first is to use the lever which, moved to the right or ft, gives forward or back movements to the pilot, the amount being determined by the time of contact. Leaving the lever on the "steady" position arrests the movement of the pilot and the main regulator, and returning it to the middle or "stop" position brings the car to rest.

A modification of this is an electric switch having an "up" and "the middle or "stop" bandle with a "up" and "the middle or "stop" bandle with a "up" and "the middle or "stop" bandle with a "up" and "the middle or "stop" bandle or "stop"

A modification of this is an electric switch having an "up" and "down" push-button, with a spring-stop handle contact, operating, so far as the pilot movement is concerned, like the lever-switch, which also has a spring return. That is, in either case, variation of control by the operator is made dependent upon the feeling of the movement, and an automatic return to the "stop" position and state of rest for the car is provided in case the operator takes his hand off the switch. This push-button control is that now used by the Postal Telegraph Building. the switch. This push-button control is that now used by the Postal Telegraph Building.

There is another method which I had an opportunity of seeing a short time ago. In this a simplified rheostat is used, likewise

controlled by a small pilot motor, but the operation both as regards angular advance and rate of movement is determined with limiting conditions, absolutely positively, by a dial or lever movement co-ordinating in all respects with the pilot, very much as in the case of certain forms of steam steering-gear. The simplicity and effective-ness of this last-mentioned regulator appears to leave little margin for improvement.

Beside the control from the car there is provided in the basement a unique general controlling switchboard, by means of which the control can be taken from the switch in any car and transferred to the switch on this board. In this way, general inspection, cleaning, testing, or, if needed, replacement of any part of the regulator or machine, whether in the ordinary course of affairs, or in case of accident, the hoisting of safes—all can be carried on from below without an operator in the car; in fact, even while in motion the control can be instantly taken from the operator and the car run from the pilot-board.

SAFETIES.

Of course, the vital question to be considered in any elevatorsystem is that of safety. This system seems in this respect to be amply provided for. The safety elements may be considered under two heads: first, those on the car, and second, those on the hoisting-machine. On the car there is the usual centrifugal safety which is machine. On the car there is the usual centritugal safety which is attached to the crosshead and is operated by a fixed cable at some determined speed. Upon being released it clutches the car-rails with steel wedges. This is a standard practice, and hence involves nothing novel. In the car, moreover, there is, as has already been described, an automatic "stop" contact which operates to bring the regulator to the "stop" position and the car at rest in case the conductor removes his hand from the controller because of crowding, and the car already segment. accident or carelessness

On the hoisting-machine there are a number of safeties. One which is perfectly apparent is due to the fact that the crosshead is moved by a screw with a heavy armature on the end of it, which is driven through the medium of a nut by a car of limited driving capacity. The screw itself is of forged steel, under tension and torsion strains, with a safety-factor of at least twenty to one.

Buckling is impossible.

The hoisting-nut, as already described, is hardened by a specific The noising-nut, as already described, is nardened by a specine process, which makes its wear very limited in character. In addition to this, there is in the nut system what is called a "safety-nut." Normally this is out of contact with the thread of the screw, but it is secured to the hoisting-nut, and should any accident happen to the latter breaking its hold on the screw, this safety-nut, the threads of which interleds with the general threads to a greater death then of which interlock with the screw's threads to a greater depth than the thread of the hoisting-nut, would then take the place of the hoisting-nut and securely grip the screw. This would throw the elevator

out of operation, because the friction between the nut and screw would be greater than the friction of the travelling crosshead, and it would act simply as a collar on the screw.

The nut system has in addition another function. Since the hoisting-nut is only held from revolving by its friction against the crosshead, when the nut gets to the upper limit of its travel, the safety-nut meets a solid collar on the screw which stops its travel, causing it and the hell-beging put to revolve with the green and causing it and the ball-bearing nut to revolve with the screw, and stopping the travel of the nut, without, however, necessarily stopping the motor, and leaving the travelling sheaves to be stopped simply

by the weight of the car.

There is still another function performed by the nut system, that of a slack cable device. If, for any reason, the car in descending, when, of course, the nut is driven along by the screw, meets an obstruction, the pressure on the nut being instantly reduced, it recedes slightly, allowing a spring between it and the safety-nut to expand, throwing the latter into back contact with the screw-thread. The nut system then instantly grips the screw; it revolves as a collar, and, consequently, acts as a check against any marked movement of the crosshead corresponding to a free fall of the car on the ropes.

Assuming, however, the condition of a perfectly free release from all operative safeties, there is a limit to the rate of revolution of the screw, and in any event there is a rubber buffer at the lower end which would cushion the stop, so as to prevent any injury.

Besides the lower-limit switch, which has already been mentioned, which puts an increasing retarding force onto the motor, there is an upper-limit switch for cutting off the current; this is a self-cleaning lock-switch, operating in both directions, and moved by a roll on the crosshead. It cuts off the current in hoisting at the upper limit and allows the brake to come on. On the reverse movement it is auto-

I have already mentioned the centrifugal on the machine, which is happily called a "monitor centrifugal." This is for operating the brake when running down too fast. In hydraulic elevators there is no speed-operating device in case of fast running, except the centrifugal on the car, and this is frequently set so much above the normal speed, on account of the annoyance of having it operated by a temperature of the contribute of the speed of the centrifugal on account of the annoyance of having it operated by a temperature of the centrifugal on the car, and the contribute to the contribute of the centrifugal on the machine, which is happily called a "monitor centrifugal". porary excess, as oftentimes to be useless when actually required. This centrifugal does not throw the machine out of operation, but simply slows it up to any desired speed, and then allows the operator

to resume control.

The dynamic action of the machine is ingeniously made use of in still another way by the introduction of a choking coil and switch operated by the same circuits governing the main brake. It is in constant play and closes the circuit around the armature and its series-coils through a rheostat under any of the following circumstances: at each stop from up or down; when running down fast enough to work centrifugal on the machine; on failure of the hoist-ing-current; or on failure of the line-current. So positive is the control over the motor, no matter whether it be

operating to hoist the car or retard it in going down, that the brake-band can actually be removed and the car still controlled, and even with the break in normal position the change from one position to another can be made so promptly that it will remain inactive

The rope fastenings are of a peculiar type, a very considerable length of rope being passed around a double spiral groove, with the free end fastened to the standing part. It constitutes a friction-grip of great strength.

ECONOMY.

I think it has been well established that there is a manifestly great economy in the matter of power as compared with the hydraulic elevator, the saving in coal being at least half, and probably more. This

may be easily understood from a consideration of the following facts:

The hydraulic and this electric elevator are both gravity machines, each using power in ascending and being retarded in descending.

The hydraulic elevator, however, must be pressured for the maximum duty it may be called upon to perform, and it should be able to lift a live-load in the car of at least 100 pounds per square foot, besides the excess of car over the counterweight. Statistics show, however, that the average live-load is not over one-fifth of the maximum, yet the standard hydraulic elevator uses precisely the same water energy (that is, the same volume under the same pressure), for every foot of travel, whatever the load, and this amount and pressure is that required when the maximum work is being performed. In average practice, the difference goes into heating the water. The electric elevator, however, is perfectly automatic in the power demanded, and, over and above that necessary to hoist the excess of car over the counterweight and overcome the friction of the machine, the current

required is almost directly proportional to the live-load on the car.

The actual result, then, is that considerably less power has to be delivered to the electric elevator than to the hydraulic. The difference is so marked that where the current is taken from the street and used on the one hand by the elevator direct, and on the other, through the medium of an electric pump for operating an hydraulic elevator of equal capacity and average duty, there would be a difference in the current metered of not less than two to five in favor of

the electric elevator.

Even with a private plant the difference is most marked, because the average pump on elevator service does not deliver a horse-power of energy to the water column of an hydraulic elevator for less than from seventy five to eighty pounds of water per horse-power hour. On the other hand, a horse-power of electrical energy can be delivered to the mains of the electric-elevator system for not exceeding fifty to sixty pounds of water, even on variable load. The result is that on a plant of any considerable size the water evaporation required from the boilers, and consequently the coal consumption, will not exceed for the electric elevator over thirty-five to forty per

cent of that required for a corresponding hydraulic plant.

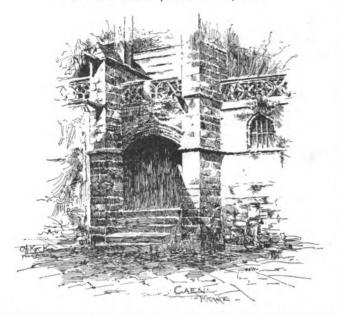
Naturally, the query arises: Since there has been so radical and marked an advance in electric elevators, what warranty is there that another type will not soon replace an existing one, or some new discovery in electricity make it obsolete? My answer is: That in every industrial development there are forms of machines which early become typical and remain so. For instance, there has been no appreciable change in the types of drum elevators in the last thirty years, and the hydraulic elevator has remained constant in general principle for a long time. The electric drum-elevator is a modification of one of the oldest types, and this particular multiple-sheave electric elevator, which I have described, is a combination of the best points of the hydraulic movement, with certain essential mechanical features, the motive power being a machine now in almost universal use and of an efficiency so high as to leave little percentage. universal use and of an efficiency so high as to leave little percentage for improvement.

Electricity itself, whatever its nature, must be regarded in this connection simply as a convenient agent for the transmission of energy, and not as a mechanism. The best electric elevator is simply the best mechanical combination for making use of this agent with the greatest factors-of-safety, speed, efficiency and convenience.

Tunnel between the Capitol and the Congressional Library.— It is known to only a few that a tunnel is to be constructed from the crypt of the Capitol under the East Park to the vaults of the great building for the Congressional Library, now in course of construction. The plans for the tunnel have been completed and work upon it will soon be begun, that it may be finished in season to be used for the transportation of the nearly 1,000,000 books and pamphlets which make up the vast bulk of the library from the old rooms to the new. It is probable that a temporary railway will be laid in the tunnel that cars may be employed to carry a large quantity of books at once. It is possible that when the new building is occupied, a pneumatic tube may be laid through the tunnel that Congressmen may immediately receive books which they desire to consult without the trouble and loss of time which would be entailed in going to the library in person or awaiting a trip by a messenger. It is not expected that the work of removal will begin before the spring of 1816. — Pittsburgh Dispatch. TUNNEL BETWEEN THE CAPITOL AND THE CONGRESSIONAL LIBRARY.

TWENTY-EIGHTH ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.1—II.

EVENING SESSION, OCTOBER 16, 1894.



THE evening session of the second day of the Annual Convention of the American Institute of American of the American Institute of Architects was, perhaps, the most

of the American Institute of Architects was, perhaps, the most enjoyable session in the annals of the Institute.

Thanks to the delay, Mr. Fox had a much larger audience for his illustrated paper on "Greek Detail," and there could have been few indeed who did not thoroughly enjoy the series—a lengthy one—of unusual views thrown on the screen. Ordinarily, a lecturer, after he has prepared his paper, in his mind at least, sets out to overhaul the stores of the best print-seller within reach, in the hope of finding such illustration as he needs, and supplements what he does find by appeals to his friends. The result is always unsatisfactory to his audience and still more so to himself, as he is constantly obliged to appologize, saying now that the feature he has just described is such apologize, saying now that the feature he has just described is such and such infinitesimal spot on a large general view, or that the view on the screen is actually the thing he was speaking about, but taken from the other side, so that it does not illustrate the point he desired to make. But Mr. Fox, working with his own camera, was able not only to secure the subjects he desired, but to take them from such standpoints as would really illustrate his remarks. It was very interesting to note how an architect's posing of his subject varied from that which is habitual with the ordinary photographer, whose aim often seems to be to present an architectural subject in the way to afford as little information as possible.

Mr. Hastings's paper took up the matter of high buildings as they interest the designing architect and not as they appeal to his constructing partner. The point he laid most stress on was that, as the problem is absolutely a new one there is not any great chance of our treating it successfully, if we are to stand in slavish awe of precedent and the rules that we have accepted as governing the designing of classes of buildings absolutely different from this. Roughly speaking, his argument was, briefly, that no matter how unscholastic, daring or unusual a proposed treatment might be, and no matter whether it broke every canon and law of design as accepted up to this time, if the proposed treatment "looked right" it was the right thing to

In opening the discussion Mr. Post said that the designing of a In opening the discussion Mr. Post said that the designing of a "high building" was not essentially different from the designing of a tower—so long as it was practically the only one of its class in its neighborhood, but this was not the case when it had several near neighbors, and still less when several were erected in absolute juxtaposition, and he asked what would become of the beauties of the Tower of St. Mark's if a dozen similar towers, or "high buildings," were placed shoulder to shoulder on one of the thirty-five-foot streets of lower New York. The sanitary effect of these high buildings on the underlying streets and their occupants he did not care to discuss: underlying streets and their occupants he did not care to discuss; it was a serious problem and he doubted the advisability of erecting more of these lotty structures, though, as an architect, he would build as many as his clients wished. The question, he thought, ought to be, and inevitably would be, settled by a law, fixing the height of buildings after the fashion of European cities. Taking up the constructive side of the question, Mr. Post created a distinct impression by saying with much impressiveness that it was his deliberate opinion, based on his long practice and experience, that the modern building as now erected with steel-cage construction was doomed to be short-lived, and he felt sure that some of the younger men would live long enough to find themselves compelled to take down the very build ings they were now so eagerly putting up. No one could yet say what would be the life of steel framework enclosed in brickwork or

1 Continued from No. 982, page 20.

masonry where it was exposed to the percolation of moisture and damp air. Judging from the fact that he had already had to take out certain beams over the boiler-room in the *Times* building and had found them so much deteriorated as almost to be breakable in the hand, he felt sure that time would bear out his prediction. advantages of the skeleton method of building were undeniable, and yet he was afraid of enclosed steel frames, but advocated the use of cast-iron columns with mechanical connections for the floor-beams and bracing whenever the new method was to be used.

Mr. Jenney, as might be expected, considering his connection with the early use of the steel-framed building, was strenuous in the expression of his belief that Mr. Post's apprehension was not well founded, but he admitted that time alone could tell which was right, founded, but he admitted that time alone could tell which was right, although he believed that a steel frame thoroughly painted, the joints carefully protected and all properly enclosed in the masonry would be found, perhaps, as long-lived as some of the bits of iron that had been found in the Egyptian monuments. The greater portion of his remarks, however, was directed to attacking Mr. Post's advocacy of cast-iron columns, and he cited several cases in his own practice. where flaws had been discovered in cast-iron work on the job after

which led him, years ago, to give up the use of cast-iron columns: in this case a twelve-foot column with a two-inch shell, through careless

handling, was most fortunately dropped while being unloaded from the truck, when, slight as the shock was, the column broke in halves; investigation showed the presence of a cinder some two feet long between the inner and outer skins of the shell and of such a consistency that its presence could hardly have been detected by the most delicate sounding.

At the suggestion of Mr. Jenney, Prof. W. H. Burr was invited to

speak to the question, and he did so at considerable length, citing case after case where, in his own practice as an engineer, he had encountered defects in cast-iron work which led him to lose all faith in that material. He said that he had frequently heard engineers express surprise at the way in which architects were willing to employ cast-iron as a building-material.

Mr. Post rejoined by admitting the credibility of all the testi-

mony that had been adduced against cast-iron, but asserted his belief again that, in spite of its detects, it was a safer material than steel or wrought-iron to use enclosed in masonry. As an instance of the perils to which enclosed ironwork is subjected, he cited a case, where during a very severe storm he was sent for to come to a building which he had erected, and on reaching the place, found that water was flowing down the inside surface of a brick wall four feet thick! To such exposure as this, he submitted, cast-iron with its practically inalterable skin offered much better resistance than the laminated structure of rolled-steel. In fact, in spite of all the the laminated structure of rolled-steel. In fact, in spite of all the evidence which was brought on the other side, Mr. Post refused to recede from his advocacy of cast-iron and his reprehension of rolled-No other speaker supported Mr. Post and this seems the more unkind seeing that, as we went about the city the next day, we did not find a single instance of skeleton construction where the columns were of rolled-steel, while we did come upon several where cast-iron columns and mechanically attached beams were being used, and we know that all of these buildings were not being built by Mr.

Mr. Robertson, the next speaker, had assumed that the discussion of the question was intended to develop that it was the opinion of the Institute assembled in convention, either that the erection of "high buildings" was undesirable and so should be checked by law, or that they were all that could be desired. He, himself, agreed with Mr. Post in thinking that it was a matter that would settle itself without the architects taking measures to press a settlement. At any rate, there was one practical consideration that had a tendency to prevent the owners of real estate from putting up buildings any higher, at least, than those already in being. He explained that the requirements of the lessees of offices in the matter of elevator service—commodious, frequent and rapid—compelled so great a waste of room for installation of the elevator-shafts and the necessary machinery that the ratio between this waste room and the rentable space was very appreciable. Lessees of offices were daily becoming more exigent in the matter of elevator-service, with the result that more and more space in the lower stories had to be abandoned to the installation of elevators, with a consequent lowering of the interest on the capital invested in the building. To be sure, there seemed to be likelihood that the electric elevators would shortly be so improved as to supersede the more bulky hydraulic elevator, just as that had largely taken the place of the steam elevator, and as electric installation consumed much less space than either of the other kinds, it would, in such event, be possible to carry the high buildings still higher. He spoke regretfully of this approaching possibility, but said that as he had already sinned by building too high buildings he supposed that he, like others, would go on sinning so long as clients

tempted them, or until the law set a limit to their soaring ambitions.

Mr. Blackall said that as his practice had not included any specially lofty buildings, he could not add much to the discussion from his personal experience: he considered the problem one of the most enjoyable that an architect could have to consider, and he thought any architect who was called on to solve it ought to feel that he was having "awfully good fun." One point he felt was

neglected by the designers of high buildings and that was that they generally overlooked in their treatment the value that lies in sheer size and mass, and from this point-of-view he held that the simpler the treatment, the better would be the result, and in support of his contention expressed the opinion that one of the best solutions had been achieved in the Monadnock Building in Chicago. In this opinion we heartly concur: it is the only one of all the "high buildings" we have seen - and almost all of them have been inspected - that created in our consciousness a real emotion, a perception that here, at last, the designer had not lost sight of the fact that grandeur does not imply lavishness and magnificence.

Previous to the opening of the discussion, Mr. Clark's paper, published in our issue last week, had been read by the Secretary.

THIRD DAY'S SESSION, OCTOBER 17, 1894.

The closing session of a convention is usually a hurried and unsatisfactory one, partly because the members are more dilatory in coming together than on the preceding days, possibly because by this time they have discovered that there is more sawdust in the stuffing of their doll than they had first supposed.

There was very little in the way of unfinished business to be cared

Mr. Gibson, on the part of the Committee on the Revision of Bylaws, said that their attention had been called to the undesirable effect of the clause which compelled members of Chapters to also become members of the Institute and asked permission to qualify it. Leave was granted, but the proposed change, while an improvement, does not altogether remove the objectionable feature of the measure to which we referred last week.

Mr. Post moved that in the new issue of the schedule of charges Mr. Carrère's sliding scale of charges be adopted in place of the charge of one per cent for preliminary studies, and this was done. Mr. L. D'C. Berg moved that at the next convention an amendment

be submitted for consideration providing for the proportionate representation of the several Chapters in the governing body.

Mr. Van Brunt took the floor to explain that the report of the Committee on Education was really nothing but an inquiry as to the causes of the "disorderly results" of architectural education in this country as evidenced in executed work, and that it was in no sense intended to be a reflection upon the schools or on those who conducted them. He emphasized his point by stating his belief that should a dozen architects be called on at the same time to design each one a separate building in the same block, no one of them would think of consulting with his fellows with the intention of securing for the block as a whole a proper architectural effect.

It seems to us that this deplorable result is due not to imper-

fect education so much as to vicious practice and immoral and petty selfishness. It is not supposable that most of these twelve men would not know as well as Mr. Van Brunt knows that their course was improper, but each one knowing the effect his fragment of the block would have on the obtaining of future commissions would make most endeavor that his work should shine apart by itself, with the rest of the block as a mere background for its superlative excellence. The twelve men know now that this method is artistically immoral and no amount of ethical training in the schools can prevent those who should have listened to the teaching Mr. Van Brunt advises from discovering that where ethical and bread-and-butter considerations

come into conflict in practical life, the latter almost inevitably prevail.

The paper by Mr. E. L. Ransome on "Concrete and Iron Construction," was most interesting and instructive and it is a great pity that it was not included in the programme for one of the earlier sessions, since it was essentially and peculiarly one which not only allowed, but invited, discussion; unfortunately there was not now

enough unoccupied time to allow of it.

Practically the same thing could be said of the paper on "Electric Elevators" by Mr. George E. Harding, the reading of which Mr. Burnham had to cut short, in order that the meeting might be closed at the stated hour and allow time for the attendants to take part in the several visits of inspection that had been provided for the afternoon. As to Mr. E. G. Lind's paper on "Acoustics," it can only be said that had there been time, it would have been read.

The election resulted in the re-election of Messrs, Burnham, Stone and Treat as President, Secretary and Treasurer respectively, and the election as Directors for three years of Messrs. L. H. Sullivan and W. L. B. Jenney of Chicago, George C. Mason, Jr. and Wilson Eyre, Jr., of Philadelphia, T. C. Link of St. Louis, Samuel Hannaford of Cincinnati, Charles A. Cummings of Boston and Edward I. Nickerson of Providence. The election of two representatives each from Chicago and Philadelphia was caused by the blunder of the

roll Chicago and Thiladelphia was caused by the builder of the printer who had printed both ballots on the same slip, which made it necessary to use it as an "Australian ballot."

The next Convention will be held in St. Louis.

The reception, or "smoker," which was provided for the visiting architects by the Mechanics' and Traders' Exchange was only less priority by the similar agreeins at Borton three parts before enjoyable than the similar occasion at Boston three years before, because it was held, not at the business rooms of the Exchange, but in the Building Trades Club-house, which was not commodious enough for the occasion. The kindness and courtesy of the hosts, however, went a long way toward discounting the physical discomfort due to heat and overcrowding.

ANNUAL ADDRESS OF THE PRESIDENT OF AMERICAN INSTITUTE OF ARCHITECTS. THE

FELLOWS OF THE AMERICAN INSTITUTE OF ARCHITECTS:

Gentlemen, — During the last year ten Fellows of the Institute have passed away: J. B. Johnston, Alpheus C. Morse, P. W. Ruehle, George H. Edbrooke, August Bauer, George Walter da Cunha, William Henri Adams, William Worth Carlin, Arthur Rotch and James Douglas.

Mr. Carlin was one of the presidents of the Western Association of Architects and a Director of the American Institute. Mr. Rotch's whole manhood was unselfishly devoted to the higher interests of his profession, to which he not only gave much of his time but also a large part of his fortune. We mourn for those who have gone; their honorable lives have left indelible impressions on our hearts and on the records of the Institute.

Since we met together, thirty-two new members have been elected and three new chapters have been formed, the latter being the South California, the Washington State, the Brooklyn. The organization now contains twenty-six Chapters and about six hundred members.

I congratulate you on the continued usefulness of the Institute; it has been conservative, though positive and progressive.

During the last twenty years the methods of practice of our profession show much improvement, due largely to the moral support of this body, the influence of which has been wise and beneficent; for, while it has from time to time recorded its convictions, it has refrained from insisting too rigidly on the observance of its rules. Through it the beliefs of the architects have been crystallized, while each man has been left quite free to pursue his own course. Though as indihas been left quite free to pursue his own course. Though as individuals we have been led or constrained by the consensus of the opinions of the Fellows, we have been moved more by a desire to conform to the established standards of professional life than by any

fear of discipline. It is a good thing for the Institute to publicly express its views oncerning vital matters of professional conduct. Until the schedule concerning vital matters of professional conduct. of fees was published, uniformity of charges did not exist, and there was no authority to back us in our demands for reasonable remuneration. Now, however, both the Federal and State courts, in the absence of agreements to the contrary, accept that document as conclusive. The people have accepted as reasonable and just what the Institute has decided to be proper and right, and thus many abuses have been cured. I believe the converse will be true and that the people will believe those things to be unreasonable and unjust which

the Institute stamps as improper and wrong.

In the long run, men are dealt with according to their estimate of themselves, and if we seek for higher standing among our country-men, we must live up to the ideals of our more unselfish moments. Let the Institute, therefore, condemn those things which we have all called wrong, but some of which we have continued to do; let this condemnation be printed on the schedule of fees, so that courts, clients and architects hereafter may not fail to understand our views: let the publication continue until custom shall have established laws too rigid to be broken, and until all men have learned to conform. There are clients now who will not deal with architects who are not in good standing among their fellows. This is a growing class of men. We should let them know what is regarded as unprofessional conduct. In his dealings with us I believe the average American will readily conform to the standards that we ourselves set up.

If clients demand and easily obtain preliminary services for little or nothing, it is our fault, not theirs; our own greed and unfairness to each other enables them to use us. We know this well and have often privately spoken of it among ourselves. Let us put a stop to this practice; it has been going on for hundreds of years, but it has always been productive of eyil, and the time has come to say so publicly.

A young man, immature, not ready for independent professional life, makes sketches, or goes into a competition, without promise of pay; in an evil day for him his design is accepted and at a bound he springs into full practice; he makes a financial success and an artistic failure, and when the fever of youth is past, if he has the soul of a real architect, he looks back with bitter sorrow to the waste of his best possibilities. As he begins, so must he go on; knowing not enough and no longer having the time for study, his last work is like his first, suggesting talent or mediocrity, according to the nature of the man, but bearing the marks of weakness, due to arrested development, and stamped with the author's sad consciousness of imperfection or conscious insolence.

The custom of showing designs to clients without pay, in the hope of "getting the job," is bad for the architect, worse for the client and worst of all for the suffering public who must be inflicted with the crudities of our youth.

Not so long ago practitioners of the law and of medicine solicited patronage; to do this now would lower the standing of any lawyer or doctor, and he would be called a pettifogger or quack. What is or doctor, and he would be called a pettifogger or quack. What is true of them should be true of architects, if we are to keep pace with them. A lawyer or doctor may not go about introducing himself and soliciting business, nor may he take fees materially less than the customary ones. No more should an architect. If the Institute condemns these things, architects must conform and stand squarely on its decision, or lose caste in the eyes of the profession and of the

Mr. Carrère has printed and circulated a paper on Preliminary

Fees; the suggestions contained in it are of high value. Let a new schedule of fees be made, containing his modifications and a statement that it is unprofessional to make preliminary drawings, for a competition or otherwise, for less than the regular fees, and I believe the abuses we have so long suffered under will soon disappear. There is great virtue in the formal publication of any truth. On the same document should be printed an expression of our belief, that the best way to obtain satisfactory designs is by employing outright an architect known to be skilled in the special work proposed to be done; that the next best method is by a competition limited to a few experienced designers, and that the poorest is by unlimited competitions.

Extensive amendments to the By-laws are proposed, and are to be acted on at this meeting. I do not wish to discuss them, but only to express the hope that nothing will be done tending to lay us open to the charge of being a trade-union instead of a deliberative society

to the charge of being a trade-union instead of a denogrative society of professional men.

For nearly a generation there has been a constant effort on the part of the Institute to introduce better methods in the designing of Government work. Our committees have been met courteously in Washington. They have always received assurances of sympathy, but have never until now had the active support of the proper

A Bill has now been introduced in both branches of Congress, which has received the endorsement of the Secretary of the Treasury, of the Senate and House Committees on Public Grounds and Buildings, and of the officers and friends of the Institute. There is strong ground for the belief that it will become a law. For this result the Institute owes special thanks to Messrs. Post, Price, Carrère, Kendall, who, together with Messrs. Hunt, McKim, Peabody

and others, have brought it about.

The Bill provides for a commission of five men, who shall have charge of the selection of the architects of all public buildings erected by the United States. Three members of it are to be architects appointed by the President. Should the measure become a law, it is evident that its success will depend upon the architects of the commission. The President will understand the inclined. mission. The President will, undoubtedly, be inclined to nominate the foremost men of the country, and the question naturally arises whether those selected by him will serve. On this point I wish to say that no one should allow himself to refuse for any cause except ill health. If an American would serve his country in any public capacity, it must nearly always be done at great personal cost. We all understand our duty in this regard, but when it comes to the test we are apt to shirk. Let the architects set an example to their fellow countrymen. Those fitted for the high functions proposed under the Bill are the men who have large business interests. If they be requested to serve, and refuse, their example will result in defeating the very purpose for which the Bill is framed, the commission will fall into the hands of inferior men, and its operations will become a reproach instead of the great benefit we are looking for. I have no doubt that the passage of this Bill will be followed by nominations for the commission, of men who can, at least, afford to give their time to the work. But they must accept, because in their hands will lie the fate of this glorious opportunity. If it be allowed to fall into the realm of perfunctory officialism, because the chief magistrate of the nation cannot induce proper citizens to take the places, the curse of a degraded public architecture will fall on us and we will be justly condemned. The highest expressions of a people's art never rise above that of its public monuments. Remember that the monuments of to-day are the public buildings, and that to start the work on them aright under this Bill the services of the most able men in the profession will be demanded, and that no one may refuse.

ELECTRICAL SCIENCE FOR ARCHITECTS.1 - VII.

METHODS OF WIRING

NCE electricity first came into general use, there has been a constant improvement in the methods of wiring. Partly from an imperfect realization of the needs, and partly from the desire for cheap construction, all the early wiring was little more than a stringing of paths for the electricity to follow. It was soon found, however, that unless special precautions were taken to confine the electricity to these paths, there was danger of fire, and the service

was made poor and uncertain.

The first wiring was generally done with an inadequately covered wire, and the conductors were fastened directly against any convenient support by means of wooden cleats. While everything was perfectly dry, and as long as the current was not greater than the perfectly dry, and as long as the current was not greater than the wire could carry without excessive heating, little trouble would be found. But, of course, it was not possible to be sure of this dryness. Natural dampness in the atmosphere, leaky roofs, the accidental spilling of water, might at any time so affect the insulation that there would be a considerable leakage of electricity. With this there would be, perhaps, a diminution in the available energy, and probably an arcing and heating that introduced a serious fire-hazard.

There are two ways in which high temperatures are caused by electric-currents. One has been mentioned before in these papers; it is the heating that takes place in any conductor when a current

it is the heating that takes place in any conductor when a current

1 Continued from No. 980, page 6.

passes through it. A large current passing through a small conductor sometimes even causes fusion. But, ordinarily, much the higher temperature is produced by the formation of an electric arc, which is familiar from its practical use in the arc-lamp. This arc is formed when a current passes from a conductor, through gases, to a conductor again. At ordinary potentials, the current can "jump across" only a very short space and these arcs are always formed by the gradual separation of the conductors. Suppose that two wires when brought together complete an electric-circuit: if the pressure forcing them together be now diminished, the electrical resistance at the contact is increased, and the current overcoming this resistance creates heat. If the wires are separated, there is at the instant of separation, a great increase in the resistance and a proportionate increase in the heat generated; the air about the contact becomes heated and the ends of the conductors themselves are, to some extent, volatilized. These vapors are conductors of relatively high resistance, and while the current can be forced through the short distance separating the ends of the better conductors, the energy required to do it is comparatively great and is manifested in integer better distance. intense heat and light.

A leaking current is likely to cause these arcs, because when a current passes by means of a partial conductor, it often burns away small particles and is maintained by an arc from one conducting particle to another. When a current is once established it is not easily broken, and a distance that would have at first proved a comeasily broken, and a distance that would have at first proved a comeasily broken, and a distance that would have at first proved a complete barrier is easily bridged by the arc with its hot, semi-conducting gases. But leakages of this kind are not alone the cause of destructive arcing. One wire may come in direct contact with the other wire of the circuit, or it may come in contact with a pipe or bell-wire in accidental connection with the other side of the circuit; and in this case there may be a "short circuit" with a very heavy flow of current, or there may be a sputter, a burning away of the metal in contact, and a resulting long arc of intense heat.

Excessive currents in multiple systems are provided against, by the use of a small wire or strip made of a fusible alloy, that will melt and break the circuit before the current has had time to dangerously heat the copper wire. These fuses are of sufficient length to make

heat the copper wire. These fuses are of sufficient length to make it impossible, when they melt, for the arc to hold across the gap in the circuit, and the fuse itself is enclosed in a non-combustible case that will not be injured by the momentary heat. In series circuits, where the current is of uniform strength, the fuse cannot be used; and even in a multiple system, if the fuse were large or not properly proportioned, a disastrous are might form and be maintained.

The modern methods of wiring have accordingly been designed to prevent, as much as possible, the leakage of electricity and the formation of "short circuits"; to keep local the effects of these accidents when they happen, and to make it easy to repair defects, the Underwriters now require all wires not encased in approved forms of moulding or in approved makes of conduit, to be supported wholly on non-combustible insulators. It is their intention that wires shall not even come in contact with anything else. They also have made stringent regulations with regard to the insulation that is to cover the copper wire. Manufacturers submit samples of their wire, and it is subjected to severe tests before the Underwriters will approve its use. No wire is allowed in concealed work, or in places exposed to dampness, except of these brands that have been approved; where the wire is entirely exposed, and is in a perfectly

dry place, a somewhat inferior insulation is allowed.

It was thought in the early days that wiring would be perfectly safe and satisfactory if it were simply buried in the plaster, or if it were strung through the spaces between floors and ceilings and in hollow walls. Although wire covered with a good insulation was often run in this way, a number of difficulties were soon met with. Carelessness in drawing the wire through confined spaces abraded or stripped the insulating covering; workmen sometimes pierced the insulation or even cut the wire with nails and tools; and there proved to be in the plaster, alkalies and acids that, sooner or later, broke down all resistance to electrical pressures. Besides these methods of wiring left no way of making repairs. In the event of a failure, there was nothing to do but to tear the wire out of the plaster, or to pull it out of the spaces in the walls and ceilings, leaving no way of

replacing it.

There are now two approved methods of running wires for low potential circuits: they may be supported on non-combustible insulators, or they may be run in conduits. Wires may be run between floors and ceilings, in the hollow spaces in walls, or in any place one wishes, if the conductors are supported wholly on noncombustible insulators, such as glass or porcelain; if the wire has an approved insulating covering; and if in passing through walls, floors, timbers, ceilings, etc., proper insulating bushings are used. Wiring by this method can be made safe and satisfactory if the work is done conscientiously. Carelessness may, however, leave vulnerable places for the carpenter's nail; there is no certainty after the work s finished that it has been properly done; and it is difficult to replace wiring that from any cause becomes defective. These disadvantages may be largely overcome if the architect will make provisions for the free access to the wires as he sometimes does to pipes. Accessible wire ways on or in the walls should be provided for upright wires, and floors should be arranged so that any part of the horizontal wiring can easily be reached. With these precautions taken, this method of wiring on insulators may be made safe, trustworthy and convenient.

The greater part of the concealed wiring in the larger buildings is now done, however, in conduits. The building is first fitted with a system of waterproof, and to some extent fireproof, tubes, much as if a twin system of gas-pipes were being installed. These tubes lead from the mains to the branches, and from the branches to the lamps, and wherever a wire is to be connected to another wire, a junction-box is provided. The wires are then drawn through these tubes and the necessary connections made. The tubes are not depended upon for insulation, but are simply raceways for the wires, protecting their insulating covering from injury, and affording a confined channel through which new wires may, at any time, be drawn. Aside from the accessibility, there is the advantage with this method, that while the conduit is installed at the time the building is erected, the actual wiring may be left until all carpenters and finishers have gone, and when there is no longer danger from carelessly-driven nails or slashing tools. The space required by the conduits is less than that necessary for porcelain insulators, and this becomes of considerable importance in the larger installations.

becomes of considerable importance in the larger installations.

It seems probable that conduit, in some form, is the last stage in the development of concealed wiring. For some time it has been possible to get wire covered with a virtually-perfect insulation, and the trouble has been that this insulation was not protected from mechanical and chemical injury. A proper conduit will protect it when it is installed; it makes possible a more suitable time for running the wires; it gives compact construction and what may

properly be called an electrical system; and it makes this system of wires capable of change and renewal at any time.

But with any method the electrical features should have consideration when the building is designed. It does not, of course, make necessary considerable changes in construction or in arrangement, but a little attention given to advisable provisions makes the wiring installation a part of the whole, rather than simply an adjunct; it gives system, too, to the wiring itself, and makes it better and more convenient. Where conduits are used, the plaster may cover entirely convenient. Where conduits are used, the plaster may cover entirely the smaller tubes, but the larger mains require channels in the walls, and, in many cases, it is advisable to have the larger tubes in channels provided with removable covers, for the largest wires are not drawn in and out of the tubes with facility. Provision should also be made for the closets or pockets that are to hold the fuse-blocks and switches. These details are not unfrequently left for the electrical contractor, but there is, of course, a distinct advantage both to him and to the architect, to have cutting avoided where possible, and when it is necessary to have it decided upon and arranged for beforehand.

Russell Robb. arranged for beforehand.

ITALIAN VILLAS.

MO know Rome is to love all of her possessions, but to love Rome is not always to know her villas. They lie chiefly outside her walls — some of them are several miles distant from the city and although they are not absolutely neglected by travellers, they form, on the whole, one of the least studied portions of the Roman domain. No one who has once become intimately acquainted Roman domain. No one who has once become intimately acquainted with their beauties can refrain from revisiting them and idling whole days away in their enchanted labyrinths. The great villas of the Renaissance are the euphonistic, theatrical and spectacular decorations of Rome. They are monumental, because nothing Roman decorations of the surrounding results and the surrounding results. man could ever be otherwise, but they give to the surroundings of the great city, first of all, a kind of light, picturesque grace which is the one thing needed in the grand and heroic Italian panorama.

This letter is dated from Viterbo because, as will presently appear,

it is in the vicinity of that little town that the Roman art of villa building culminated in an example which still exists and is in a perfect state of preservation. The general history of the art is written in and about Rome, and dates, roughly speaking, from the sixteenth and seventeenth centuries. The Villa d'Este, at Tivoli, one of the appliest and most magnificant villes near Rome is comited. of the earliest and most magnificent villas near Rome, is ascribed to ot the earnest and most magnificent vinas near Rome, is ascribed to 1549, when Pirro Ligorio planned it for Cardinal Ippolito d'Este. The Falconieri, which is among the principal villas of Frascati, was also projected about the same time. In the eighteenth century, practically nothing on the same scale or in the same style was accomplished. Outside the Porta Salaria, the small Villa Albani, which belongs to this period is a good specimen of the rigidly formal accompushed. Outside the Forta Saiaria, the small villa Albani, which belongs to this period, is a good specimen of the rigidly formal manner into which the landscape architecture of the time declined. It is well kept up, is delightful of its kind, and is really necessary to see as an illustration of one phase of the art it represents. Curiously enough, the style which would have been expected here—the decorative style of the eighteenth century — is absent. The palace in the Villa d'Este, by Ligorio, is one of the stateliest mansions in Italy. But in the spirit of their work on the gardens, the designers anticipated the finest spirit of the eighteenth century, giving their elegance a peculiarly dainty and even quaint accent; adorning their productions with the touches of ornate humor, of refined extravagance, which the famous Arcadia introduced into later talian literature. Perhaps the best equivalent for their mood, in the sphere of pictorial art, is the mood of Watteau, of Fragonard, of Boucher. The reader who recalls the general effect of one of Watteau's fêtes champêtre will have the most suggestive sidelight on the Italian villas.

These villas, however, remain always Italian, and it is here that some of the most essential points in their construction have to be considered. They were built, as a rule, on the sumptuous Roman

scale, without stint and without any thought of the difficulties nature might set in the builder's path. The patricians of the epoch were veritable profligates of land, and they were also the masters of it. The Villa d'Este, for instance, extends from the top to the bottom of a long and steep slope. On the apex of the hill is thrown the villa itself, or, as it may be called to avoid confusion, the palace. It is an immense structure, erected on the severest lines, and crowning the hill with a dignity and an austere beauty that suggest, in those relations, some of the celebrated palaces of Bramante. At its feet lies fairyland. Scorning all the irregularities of the site, the builder constructed the precipitous descent with grandiose ramps and staircases that lead from one majestic terrace to another, only to disclose the presence of a third farther down. At every one of these pauses a fountain is encountered, and to the right and left, paths placed at right angles to the central avenue lead through cypresses to other fountains, to little fish ponds enclosed in crumbling marble, or to a bosky exedra, where the sun only filters through the dense foliage above. Straight down from the platform, before the portal in the centre of the palace, the main descent falls, with the ramps and staircases just referred to, marking its divisions from terrace to terrace in large lines. Superb cypresses line the walk, and from terrace in large lines. Superb cypresses line the walk, and from the fountains there gush forth innumerable streams, some of them flying to a height of fifteen or twenty feet. Everywhere, in the fountains and enormous basins, in the seats, urns and statues, the most lavish use of stone and marble is noticed. Some of the fountains—like one that plays at the side near the middle of the descent and is surrounded by a colonnade—must have exhausted material sufficient for the construction of a small house. Everywhere the stone is carved in artistic, decorative forms. This was building in the grand style. And what is most remarkable about it is the unity of the design. No matter how vast the estate might be, the designer seems to have conceived his plan with the same feeling for balance and symmetry that might have presided over the invenfor balance and symmetry that might have presided over the invention of a façade.

The Villa d'Este has been touched upon somewhat at length

because it is one of the very finest villas extant; but in any of the erections of the time, the aim is found to have the same character. Sometimes, as in the Villa Medici, on the Pincio, which Annibale Lippi constructed in 1540, a very convenient site was available. Here the land is in two distinct levels. On the lower of the two, where the admirable palace was built, the grounds had only to be laid out in formal style. In an early painting which hangs in the gallery at Naples, it is shown that the arrangement was not materigallery at Naples, it is shown that the arrangement was not materially different from what it is now, being principally a matter of flower-beds, fountains, paths and hedges. The upper level was treated freely as a "bosco." Other villas, like the d'Este, and like the Conti and Aldobrandini, at Frascati, were built upon decidedly uneven ground; and then, invariably, there were employed the masterly expedients which have just been pointed out. Some of the remaining villas, where the scale is large and where the site has necessitated especially interesting measures of terracing, may be named for the benefit of the traveller. At Frascati, flung on the side of the mountain as though by some gigantic whim, the Villa Mondragone possesses a terrace, with balustrades, fountains and gigantic flower pots, that is among the splendors of the old villa architecture. The Falconieri, Taverna and Ruffinella, all at Frascati, are also representatives; and nearer Rome, not far from the Porta San Pancrazio, the Doria Pamphili is the best of all the villas in the immediate neighborhood of the city. The extensive Villa Borghese has fine drives, but it was laid out more as a park than as a villa, and just now it is less interesting than it ever was, through the bad management of it as property in the hands of the Govern-

ment.

There are two interesting villas near Viterbo. At Caprarola, some ten or twelve miles distant, is a palace which Vignola built for the Farnese in the middle of the sixteenth century. The drive over is a long one, the best carozza available in Viterbo is apt to be a vehicle of the most uncertain and uncomfortable habits, and Caprarola, a small isolated town, is not especially amusing. But you have the Italian hills about you; you pass, on the way, the exquisitely blue little Lago di Vico, shining like a jewel in the valley and when you reach the palazzo all your inconveniences are exquisitely ofthe fixed page of vice, shifting like a lewel in the valley, and when you reach the palazzo all your inconveniences are forgotten. The massive edifice overlooks the town, and between it and the latter there is a foretaste of the grandeur of the place, in a series of terraces and ramps that would do credit to an imperial city, to say nothing of a village like Caprarola. Behind the severe façade are spacious rooms embellished with freecos, and beyond those lies a circular court with stone pillars and arches of impressive dimensions. Then quite at the other side comes the garden. It has been modified somewhat by the present keeper of the palace, and fruit-trees abound where formerly there were only paths, hedges and flowers; but the broad lines remain, and a few minutes' walk from the palace, beyond a pretty bosco, there is a palazzina, a little casino also designed by Vignola, which is as fine as anything near Rome. The fact that it is now used as a cow-shed does not rob it of its external beauty. The terracing is as fine, the row of fountains play as picturesquely, the antique statues are as effective against their thick background of green, as they would be were the palazzina still the resort of bewitching Renaissance dames and gallants in the dress of Titian or Carpaccio. It is not easy to obtain access to this villa. It is necessary, I believe, to obtain a permit from the steward of the ex-king Francis of Naples, in Rome, and even that those lies a circular court with stone pillars and arches of impressive

has not recently been instantly forthcoming. But no one bent on entering need despair of passing the gate; and once past, all the labor of the adventure is more than repaid. Even failure would be compensated by the drive back to Viterbo under the stars.

The Villa Lante is always accessible, and happily so, for this is the last, the most ravishing of Italian villas, the one in which all the best qualities of the others are united in a faultless whole. It lies about two miles to the northeast of Viterbo, on the edge of Bagnaia, an insignificant town of few inhabitants. The approach is up a narrow, dingy street, which ends at the entrance to the villa. The latter is comparatively small, and is built on an incline which is a continuation of the grade of the street. In the centre of the first level, a bronze fountain with four upright male figures plays in the middle of a square marble basin. The garden surrounding it, which is itself inclosed by tall hedges, is of the same proportions as the basin. From this level, two ramps, built in the approved Roman fashion, ascend to another on which stood the two little palaces of the estate, both alike and placed one at either side, say, a hundred and fifty, perhaps two hundred, feet of ground between. On the terrace that occupies this central space, a semicircular fountain in three stages abuts, and on either side staircases lead higher up. Another fountain is discovered on this second terrace, another appears on the third, still another adorns the fourth, and, finally, at the top, a wide basin with fountains above it reveals the source of the sparkling water that goes merrily down to the bronzes. It does not go through subterranean passages or through prosaic pipes. It flows from fountain to fountain through richly wrought stone channels; it falls from one basin to another, and what you see as you stand beside the highest of these many receptacles is a perfect arabesque of hoary stone with countless jets of silvery water gleaming in the sun. You see a succession of steps, inclines, balustrades and urns, all heavily decorated, all covered with flowers and vines, all shadowed in spite of the sun, by magnificent oaks, descending with indescribable pomp to the gateway far below. No words could picture the lovely scene. A photograph does it the scantiest justice, and a sketch from a photograph would be a positive misrepresentation. Lamb was the only man who ever knew how to reproduce the atmosphere of antique gardens. Sir Thomas Browne and Bacon wrote in a vein too detached and stately to quite catch the last fine shade of sentiment that broods over the dim, silent walks and the glittering terraces and fountains. It is largely a sentiment that creates their fascination, that dedicates them to a new god, half sylvan, half urban. Rich as they are in the purest architectural beauties, eloquent as they are in lessons as to how houses should be designed with relation to their gardens, and vice versa, ti is still the harmonious working of art and nature, with time and the magic of historical association, that makes a villa like the Lante a source of unblemished happiness. There is nothing like it anywhere but in Italy. The beauty of Versailles is one thing, the beauty of Haddon Hall, is another, and the beauty of the Alcazar at Seville is a third. The beauty of the villas of Italy is a fourth, and it is unique.— N. Y. Tribune.

AMATEUR CONTRACTORS.

AMATEUR CONTRACTORS.

PAPER was read a month or so ago in the section of Economic Science at the meeting of the British Association at Oxford by Mr. Sidney Webb, on "The Alleged Economic Heresies of tha London County Council," of which the Architect gives the following abstract. He said: The policy of the London County Council has been intelligently criticised, from the point-of-view of economic science, mainly under three heads. Instead of "buying its labor in the cheapest market," as it was termed, it has from the first striven to adopt as its standard the trade-union rate of wages, and to assert a "moral minimum" of earnings below which it was inexpedient that any London citizen should be allowed to sink. Moreover, not content with proceeding on these lines as regards the workmen whom it directly employs, it has sought throughout to secure that all contractors executing its work should adopt the same principle. Finally, it has endeavored, wherever possible, to dispense with the middleman entrepreneur, and to substitute salaried supervision and management directly under public control. On all three points it has been accused of economic heresy by those who believed themselves to be expressing the conclusions of economic orthodoxy. On all three its action is largely influencing public opinion. It seems desirable, therefore, to set forth precisely the facts and to reconsider the action is largely influencing public opinion. It seems desirable, therefore, to set forth precisely the facts and to reconsider the economic position.

economic position.

After prolonged discussions, repeated at intervals during four years, it has become settled policy (a) to pay in each trade the recognized standard rate of wages, (b) to give no adult male workman less than 6d. per hour and no adult woman less than 18s. per week. The labor policy of the London County Council, whether with regard to skilled or to unskilled labor, may be explained as the deliberate choice of that form of competition which secures the greatest possible efficiency as compared with the form which secures the greatest apparent channess. Public offices may be filled in one of greatest apparent cheapness. Public offices may be filled in one of two ways. We may on the one hand practically put the places up to auction, taking those candidates who offer to do the work for the lowest wages; or, on the other hand, we may first fix the emoluments and then pick the best of the candidates coming forward on those terms. The London County Council has learned by long and painful experience that there is so much difference between competence and incompetence that it does not dream of seeking to save

money by taking the candidate who offers his services at the lowest rate. Whether the post to be filled be that of an architect or a carpenter, the wage to be paid is first fixed at a rate sufficient to carpenter, the wage to be paid is first fixed at a rate sufficient to attract the best class of men in the particular occupation. Then the most competent candidate that can be found is chosen. With regard to the lowlier grades of labor a further consideration enters in. The London County Council, responsible as it is for the health of the people of London, declines to use its position as an employer deliberately to degrade that health by paying wages obviously and flagrantly insufficient for maintenance, even if competition drives

down rates to that pitch.

So far, indeed, is the Council's action from being economically heretical, as is commonly supposed in West End drawing-rooms, that it is exactly what the instructed economist would nowadays recommend. The economic heretics, in fact, are those who, in flat defiance of Adam Smith, M'Culloch, Mill and Marshall alike, persist in assuming that there is some obligatory "law" that the pressure of competition ought, without interference from man, to be allowed so to act as to degrade the standard of life of the whole allowed so to act as to degrade the standard of life of the whole community.

Some critics demur to any interference with the freedom of contractors, and denounce as economically heretical the Council's standing order confining the Council's work to such firms as adopt the current standard rate of wages. The very object of industrial competition, they say, is to keep the cost of production down to the lowest possible point, and any interference with the contractor's freedom to do his business in his own way tends to increase that cost. These criticisms confuse cost of production with expenses of production. What the community has at heart is a reduction of the cost of production — that is, of the efforts and sacrifices involved in getting the object desired. It was in order to put a stop to the constant tendency of contractors to nibble at the current standard wages that the London County Council inserted its celebrated fair-wages clauses. These clauses, it will be observed, leave open to contractors every chance of profit which comes from reduction of the contractors every chance of profit which comes from reduction of the cost of production. By concentrating the contractor's energy and attention on this point they presumably increase the fierceness of that part of the competitive struggle which promotes the public good. Here, again, the key-note of the Council's policy is, not the abolition of competition, but the shifting of its plane from mere cheapness to that of industrial efficiency. The speeding up of machinery, the better organizations of labor, the greater competency of manager, clerk, or craftsman, are all stimulated and encouraged by the deliberate closing up to the contractor of other means of making profit.

making profit.

With regard to the Council's determination to dispense wherever possible with the contractor, and execute its works by engaging a possible with the contractor, and execute its works by engaging a staff of workmen under the supervision of its own salaried officers, this has been fiercely attacked as being palpably and obviously opposed to political economy and business experience. Mr. Webb showed by figures that there had been a saving of 2,420l. or 12.33 per cent in the first sixteen operations carried out by the Council without a contractor. It is usually assumed, continued Mr. Webb, by the Council's critics that its policy of eliminating the contractor is an unparalleled innovation unknown outside London. A little knowledge of the action of local governing bodies elsewhere would is an unparalleled innovation unknown outside London. A little knowledge of the action of local governing bodies elsewhere would prevent this mistake. The Corporation of Birmingham is going far beyond the London County Council. When we thus find even the county councils in rural districts giving up the contractor, it ceases to be surprising that the Town Council of Manchester, in the city of Cobdon and Bright now manufacture it come has been been contracted. Cobden and Bright, now manufactures its own bass-brooms, or even that the ultra-conservative Commissioners of Sewers of the City of that the ultra-conservative Commissioners of Sewers of the City of London actually set the County Council an example by manufacturing their own carts. The superiority of direct municipal employment under salaried supervision to the system of letting out works to contractors has, in fact, been slowly borne in on the best municipal authorities all over the country by their own administrative experience, quite irrespective of social or political theories. With regard to the integration of processes, Mr. Webb pointed out that within the last twenty years the maxim in large industries was "Never buy from any one else what you can manufacture for yourself."

He concluded by asking. Why is the elimination of the City of the concluded by asking.

He concluded by asking, Why is the elimination of the subsidiary entrepreneur more practicable now than it was in the last generation? It would take too long to examine the fundamental causes and conditions of this change in industrial organization. Most changes in social structure depend, in the long run, upon individual character; possibly there has been a growth in the number of men who can be trusted to work efficiently and honestly as salaried managers instead possibly there has been a growth in the number of men who can be trusted to work efficiently and honestly as salaried managers instead of for their own personal profit. Possibly, too, as industrial organization becomes more complex, the advantage to the consumer in directly controlling the production of every article he requires becomes more apparent. All improvements in social organization, too — steam, telegraphy, the free use of the printing-press, and now the telephone — facilitate the massing of workmen under single generals of industry, able efficiently to control larger and more heterogeneous and more complex industrial armies than could be managed by the captains of the past generation. Finally, as regards the substitution of the collective for the individual management of industry, it is evident that this will have been rendered increasingly practicable by the perfecting of democratic organization. All these and other influences are but fragmentary suggestions towards the explanation of a change in industry of which the supposed economic heresy of the London County Council is but one out of many manifestations. Formerly, the best business management was that which itself managed least. Nowadays, the best business management is that which can safely and efficiently administer most. The integration of productive processes under direct control of the consumers may or may not be economic heresy; the business history of England for the past twenty years indicates that it is industrial orthodoxy.

Mr. Edward Atkinson was surprised that Mr. Webb had so completely justified the principle of competition. The County Council had successfully competed with contractors by dispensing with contractors. High wages and cheapness of production was the rule which prevailed in the United States, and was being tried successfully by the Council.

Professor Nicholson observed, with respect to getting rid of the middleman, that this doctrine was not new, but was earnestly supported by Adam Smith as one of his cardinal principles.

General Strachey agreed with what Mr. Webb had said. In days gone by, all the railways were constructed by the contractor. Now, it was hardly ever done.

Professor Foxwell said that the tendency of the aggregation of many businesses in one hand was by no means universal, and there

Professor Foxwell said that the tendency of the aggregation of many businesses in one hand was by no means universal, and there were striking instances of an opposite character. He was afraid that the irritation at the inevitable inequality in human ability and character, and the necessary and justifiable inequality of emolument was one of the most striking and least attractive elements of the modern democracy

Mr. Bond said there was an impression that the London County Council overpaid their unskilled workmen and underpaid the most highly skilled. The Council might do better than endeavor to master the details of every trade, and he disapproved the rigid

adherence to trade unions.



THE ENGINEERS' CLUB OF PHILADELPHIA.

T the business meeting, held October 6, 1894, forty-eight mem-

bers and visitors were present.

The Secretary read a circular letter and proposition from Mr. E. L. Corthell, for the establishment of an International Institute of Engineers and Architects, the principal objects of which would be:

- To unite in closer relations all departments of engineer-First. -

ing and architecture.

Second. — To furnish a suitable and convenient channel by which information relating to new discoveries, processes, methods, inventions and works may pass from one country to all other civilized countries of the world for the benefit of the profession and of man-

Third. — To conduct, by the assistance of the Fellows of the Institute, individuals and governments, systematic and thorough tests of all classes of materials used in constructive work, and to disseminate the contractive work of the contractive work.

of all classes of materials used in constructive work, and to disk in nate through the channel of the Institute the resulting information.

This proposition elicited much discussion, and a motion was made by Mr. Robert A. Cummings, that a committee of three be appointed by the Chair to consider the matter and report at a future meeting of the Club. Carried.

L. F. Rondinella, Secretary. of the Club. Carried.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

STAIRCASE IN THE MAIN COURT OF THE CRIMINAL COURTS BUILDING, CORNER CENTRE AND FRANKLIN STREETS, NEW YORK, N. Y. MESSRS. THOM, WILSON & SCHAARSCHMIDT, AR-CHITECTS, NEW YORK, N. Y.

[Gelatine Print issued with the International and Imperial Editions only.]

ATTEMPT AT DIFFERENT STYLES OF RENDERING, BY MR. C. ALOIS HERMAN, ST. LOUIS, MO.

HOUSE FOR PROF. ALEXANDER GRAHAM BELL, BADDECK, C. B. MESSRS. CABOT, EVERETT & MEAD, ARCHITECTS, BOSTON, MASS.

DOORWAY OF ARNOLD'S MANSION, FAIRMOUNT PARK, PHILADEL-PHIA, PA. SKETCHED BY MR. FRANK A. HAYS, PHILADELPHIA,

PROPOSED ARMORY FOR TROOP A, N. G. S. N. Y. MESSRS. PAUL-SEN & LAVALLE, ARCHITECTS, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

THE MARINE CAFÉ, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL.

[Gelatine Print.]

STAIRCASE IN THE MAIN COURT OF THE CRIMINAL COURTS BUILDING, NEW YORK, N. Y. MESSRS. THOM, WILSON & SCHAARSCHMIDT, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

The figure of "Oratory," on the lower landing, was modelled by a young French sculptor, in Paris, Roiney by name.

P. & O. COMPANY'S NEW OFFICES, LEADENHALL STREET, LONDON, E. C., ENG. MR. T. E. COLLCUTT, ARCHITECT.

This illustration shows the building without the sculptured panels, which enhance the effect.

HILL WOOTTON, WARWICKSHIRE, ENG. MR. P. MORLEY HORDER, ARCHITECT.

This little Warwickshire house and stabling cost only some 1,500l., including boundary walls — the house itself only 1,000l. The principal rooms have been treated with painted panelling, and the house throughout has been treated with the utmost care. A view from the stable yard was exhibited in this year's Royal Academy.



Boston, Mass.—Exhibition of the Works of Adolf Menzel; also, Drawings by John Trumbull: at the Museum of Fine Arts, in October and November. Paintings by Elihu Vedder: at Doll & Richards, 2 Park St., during

BRIDGEPORT, CONN. — Exhibition of the Sella collection of photographs of Alpine and Caucasian scenes: at the Public Library Art Gallery,

September 8 to October 27. CHICAGO, ILL. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.
 NEW YORK, N. Y. — Loan Exhibition of Portraits of American Women:

the Norman X. — Loan Exhibition of Portraits of American Women: at the National Academy of Design, opens November 1.

Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

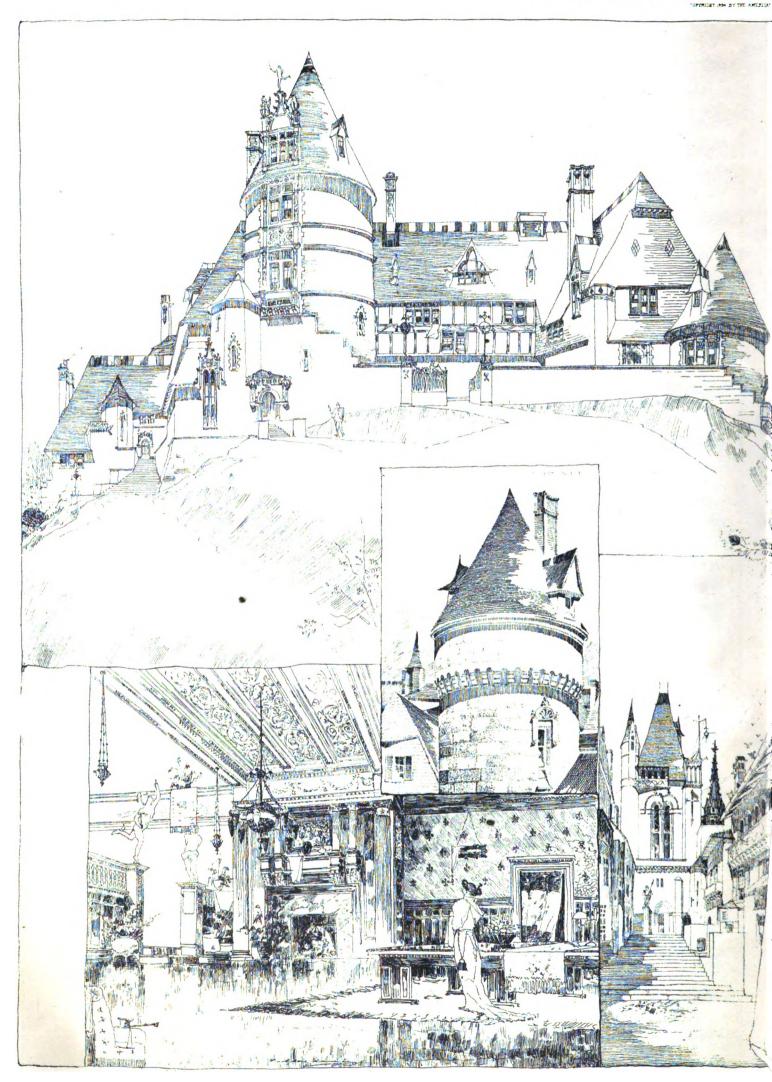
Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

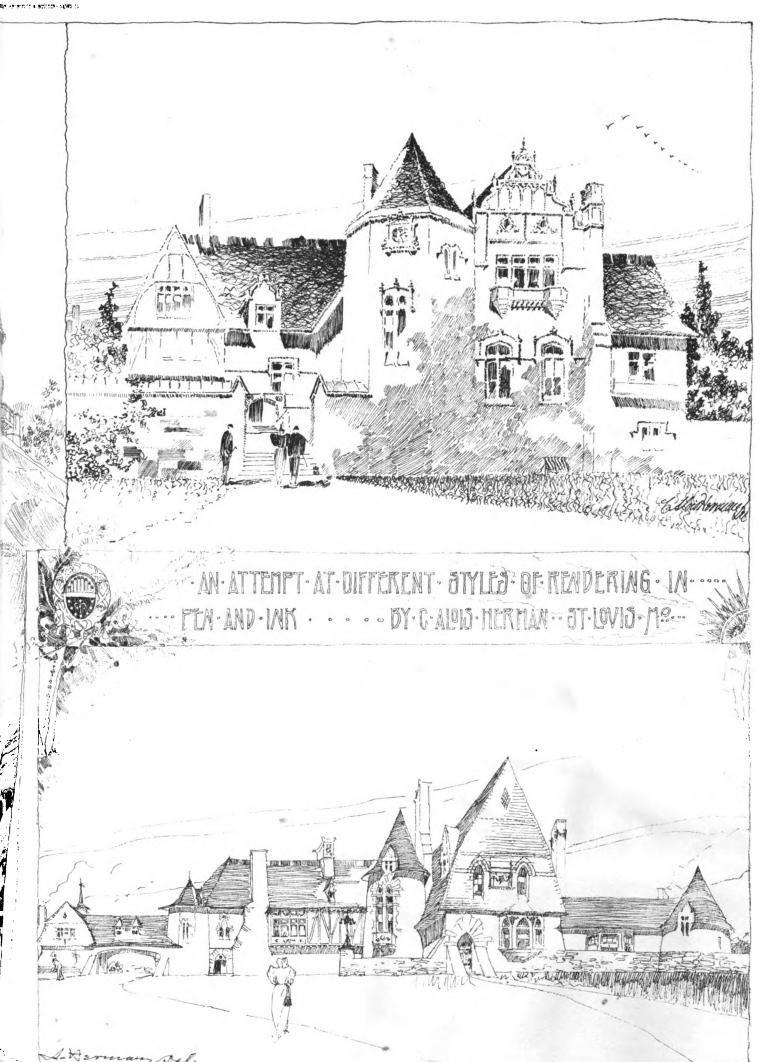
PHILADELPHIA, PA. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

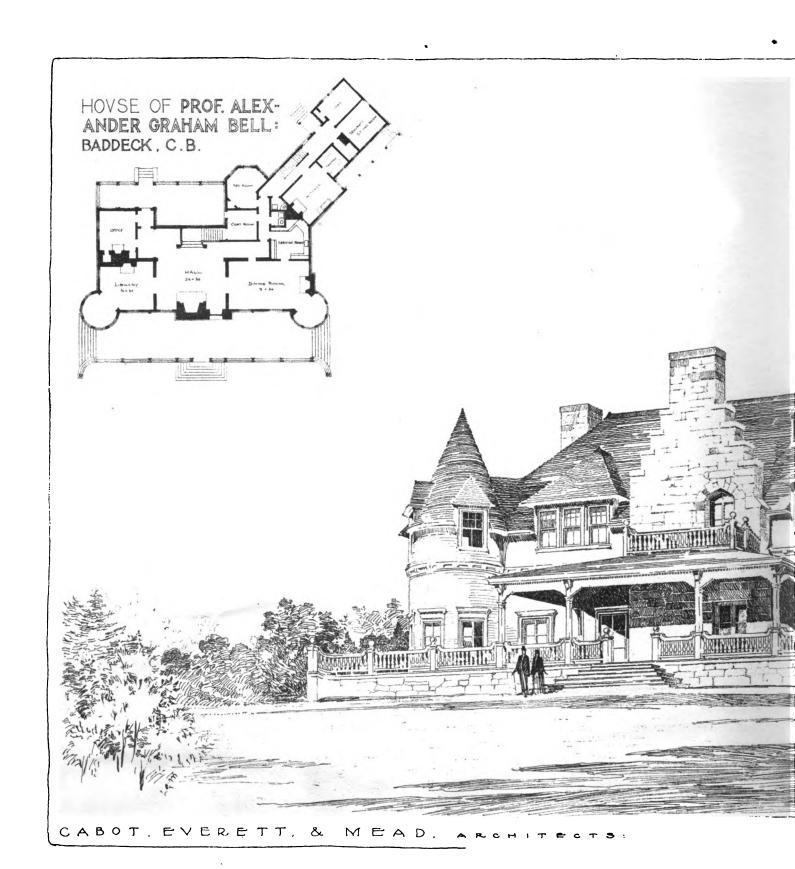
Early London Directories —The earliest known directory of people and places seems to be that of London, in 1677, of which only three copies are known — one in the Bodleian Library, one in the Manchester Free Library (which was bought for £5), and one sold at the Rev. Mr. Hunter's sale, which realized £9, although imperfect. The Manchester copy was carefully reprinted in 1878 (by Chatto & Windus) with an interesting introduction; and the next London directory seems to have been one of 300 pages published in 1732. The editor of the reprint in 1878 gives some details of earlier manuscript directories, or "Office of Addresses," by Henry Robinson, in 1650, who had an "office in Threadneedle Street, over against the Castle Tavern, close to the Old Exchange in London," and it was described as "keeping particular registers of all manners of addresses," with a "Catalogue of subjects of inquiry" so copious and so curious as to be a fresh proof that there is nothing new under the sun. Sixpence was the fee, and for this small sum answers to all sorts of questions connected with business could be obtained. — Notes and Queries.

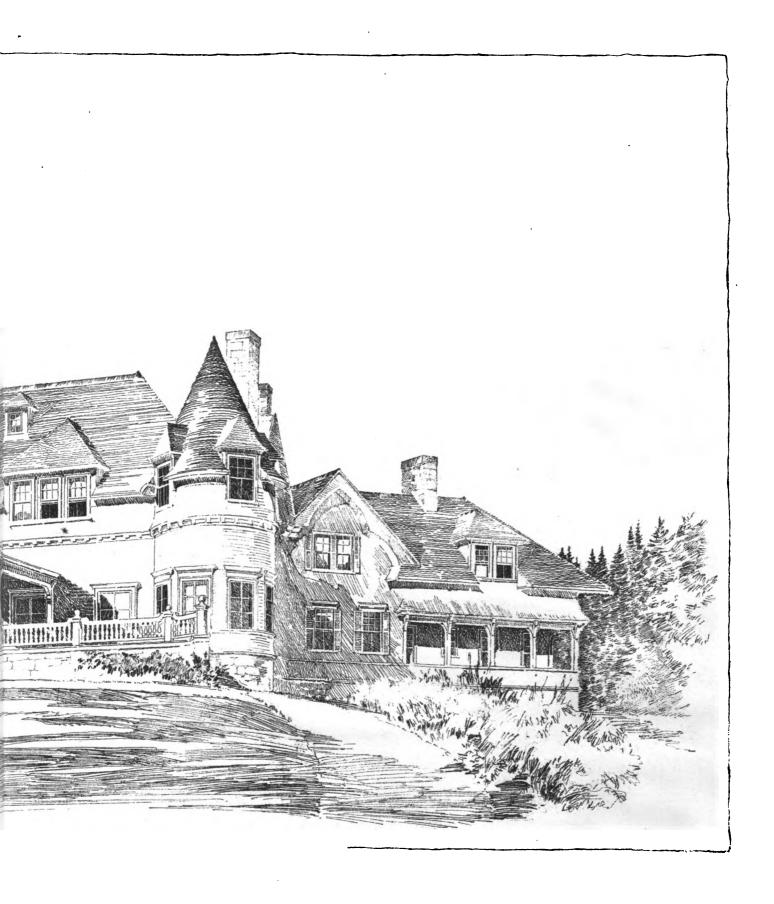
The Silver Altar at Guadalupe, Mexico.—A despatch from Mexico announces that the erection of the magnificent canopy over the high-altar of Our Lady in the shrine of Gaudalupe has been completed. The pillars to support it are each a solid block of polished Scotch granite, weighing seven tons. The diameter of each pillar is three feet and the height twenty feet. The altar will be ready for dedication December 12 (Guadalupe Day), and will be the most elaborate and costly one in America. The additions to the church edifice will not be completed for nearly two years at the present rate of progress. When finished, the shrine of the Lady of Guadalupe will be one of the most notable Catholic church edifices in the world. The solid silver altar railing weighs twenty-six tons, and many millions of dollars are in other ways represented in the palatial place of worship. — Philadelphia Press.

S. J. PARKHILL & Co., Printers, Boston, U. S. A.

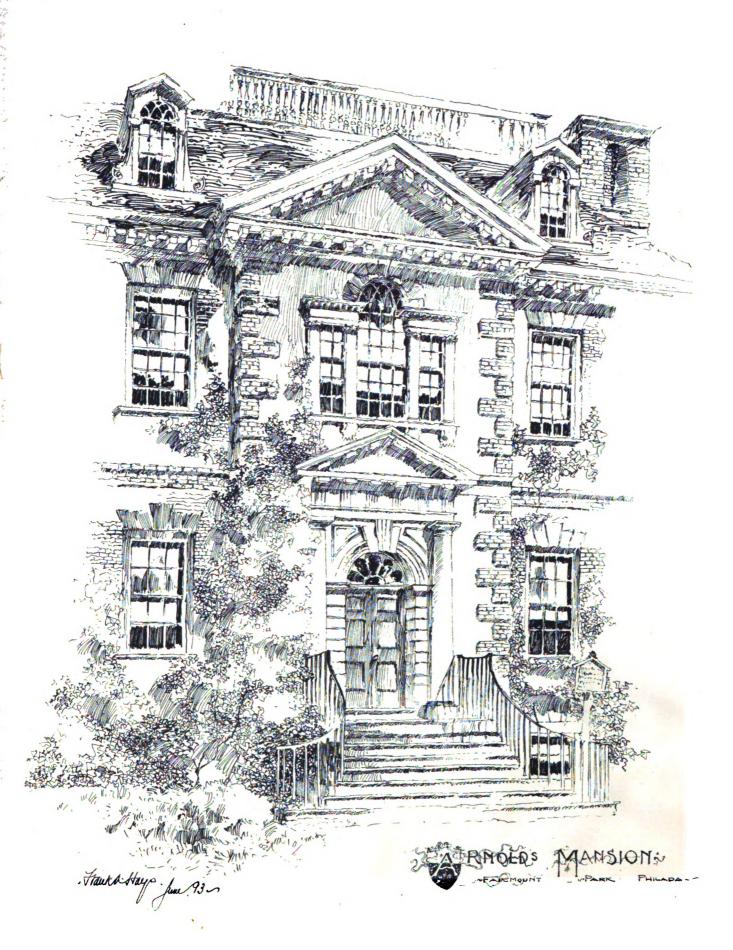






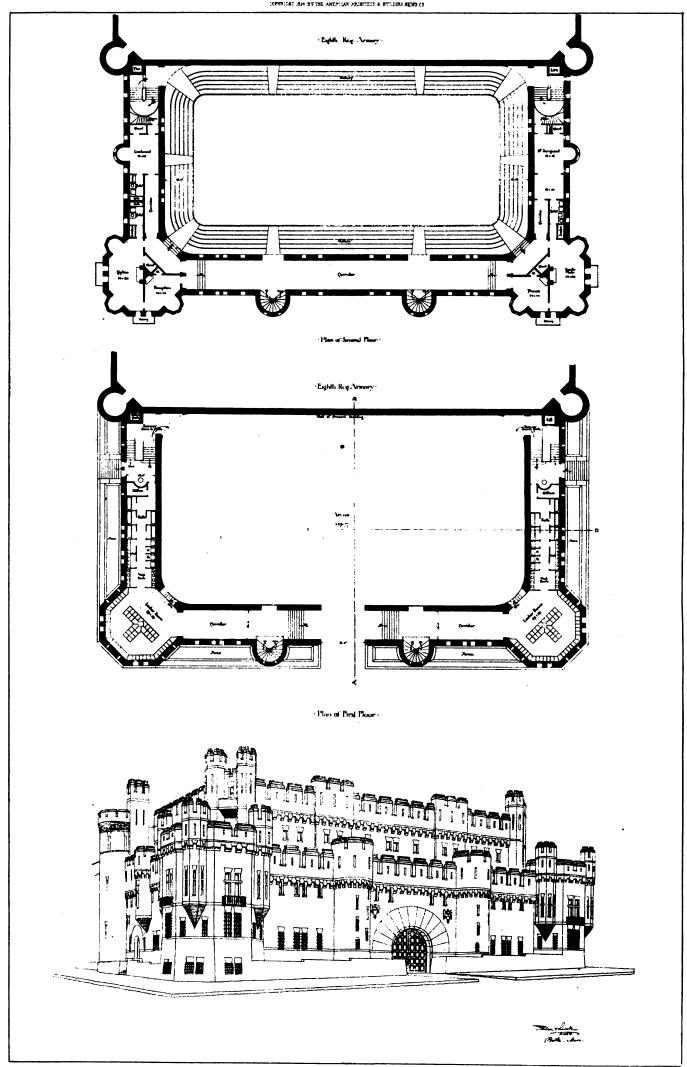


BELIOTYPE PRINTING C!, BOSTON



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PO. 983. MERIGAN ARCHITECT AND BUILDING NEWS, OCT. 27. 1894.



PROPOSED · ARMORY ·
FOR · TROOP · A · N · G · S · N · Y

BELIOTYPE PRINTING C!, BOSTO

NOVEMBER 3, 1894.



Summary: —
Proposed Action regarding the Commercial Water-front of
Boston The Evils of the Present Dock System What
the Existence of better Docks would mean Commercially
Death of James K. Wilson, Architect The Cheapness of
Structural Steel.—Strike of the Scotch Coal-miners.—Ama-
teur Actors to provide Funds for the English School of Ar-
chæology, at Athens. — The Proposed Underground Electric
Railway for Rudanest
Railway for Budapest
THE WHOLESALE ARCHITECT AS AN EDUCATOR
THE INFLUENCE OF THE HANSEATIC LEAGUE ON THE ARCHITECT-
URE OF NORTHERN EUROPE. — III
THE EFFECT OF FROST ON GREEN MASONRY
Some Constructions in Linear Perspective. — II
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ILLUSTRATIONS: —
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Francisco, Cal. — Church of SS. Peter and Paul, Jamestown,
N. Y. — St. Anthony's Church, Allston, Mass. — Two
Designs for Churches.
Additional: Keneseth Israel Synagogue, Broad St., Philadel-
phia, Pa. — A Private Hotel, Rue Hamelin, Paris, France.—
Interior of Porte Cochère of a Private Hotel, Rue Hamelin,
Paris, France. — No. 180 Queen's Gate, Kensington, London,
Eng. — No. 179 Queen's Gate, Kensington, London, Eng.
Communications: —
The Essential Conditions of Safety in Theatres. — The Inter-
Club Competition. — The Report of the Committee on Edu-
cation of the American Institute of Architects The Battle
with Fire: A Correction. — The Dry-closet Systems
EXHIBITIONS
NOTES AND CLIPPINGS

COME feeble effort seems to be making to promote the commercial interests of Boston, by suggesting that the city should take possession of the large part of the water-front, and build new piers, as has already been done by the municipality in New York. One or two hearings in regard to the matter have been given by the city authorities, and it has been made evident that some, at least, of the present generation of Bostonians would like to see the days revived when Boston ships and Boston captains carried the American flag to nearly every seaport in the world.

THETHER the matter will ever go any further remains to be seen. There is every reason why Boston should become a great commercial city. It is half a day's sail nearer Europe than New York, it has a better harbor, an almost unlimited water-front, a good Custom-house service, and admirable railway connection with all parts of the United States and Canada; and that it should be, as it now is, about on a level, as regards commercial facilities, with a second-rate Chinese port, appears to be due simply to the apathy of the people most concerned, who, after they have made one experiment at importing goods by this route, instead of protesting publicly against the wretched piers, and the miserable tackle with which their unfortunate cases are tumbled slowly about, meekly order their future consignments to be shipped by the way of New York, and wash their hands forever of the "commercial facilities" of Boston. No doubt, one indignant importer could not do much to change this state of things, but a large number could do a good deal; and the combined action of all the people who would like to see the commercial greatness of Boston revived, and of those who do not care much for the greatness, but would like to be able to import their goods by the shortest, and, in many respects, best and most convenient route, might, now that public attention has been directed to the matter, bring about a change. In this change, they would be seconded by the great foreign steamship lines, if not by ship-owners at home. It is well known that every company which has ever been formed in England to run steamships to the United States has laid its plans to send its vessels to Boston, imagining, from the information derived from the railway maps and the Coast Survey charts, that here would be found the best and nearest harbor, and the quickest communication with the interior. A few months' experience of the cold reception accorded to commercial ventures in

Boston has undeceived them, and nearly all of them have soon changed their American port to New York, where could be found the advantages of rapid discharge, and ready return cargoes, which were lacking in Boston. Even now, the bare possibility that Boston may awake again from its commercial lethargy appears to have revived the old hope in the bosoms of foreign ship-owners, for, within a week or so, the announcement has been made that one of the lines which has kept faithfully by Boston is about to double its service, while one of the Montreal lines has decided to transfer its ships to Boston, at least for the present, and there are rumors of the establishment of two new lines, one between Bristol and Boston, and the other from Antwerp to Boston.

TF the Boston people are wise, they will not let this oppor-I tunity slip through their fingers. However unpleasant it may be to exert one's self to see that the Antwerp captain is not compelled, on his first trip, to have his crates of Venetian glass and French china rolled over the pavement with hooks toward the cars by which they are to be shipped to Chicago or St. Louis, or that the cases of velvets and laces from the new Bristol steamers are not received and stored in a shed with no particular roof, and still less floor, it should be remembered that the arrival and departure of four new steamships a week means, if proper facilities for business are afforded them, transfer charges, insurance and commissions on some thirty-two thousand tons of merchandise every six days; it means the loading and unloading, reception and dispatch, of thirty-two hundred new freight cars every week; it means dividends for the New England railroads, rents for water-front property, and employment and prosperity for a very large number of Boston people who have nearly forgotten what prosperity is. There is no need of placing the piers in the hands of the municipal government to accomplish all this, and the process of doing so would be so long that the steamship agents would get tired of waiting before the revolution was accomplished. A much better way would be for the Chamber of Commerce, or some similar existing body, to depute at once a good committee to examine the existing commercial facilities of the city, and report upon their deficiencies, and propose means for improving them. In most cases, the private owners would be glad to have such suggestions made by competent persons, and, in their own interest, would probably carry them out; but, rather than lose the increased trade which is now offered, the municipality should be empowered to enter upon the premises and cause the changes to be made, charging the cost, or a part of it, to the owners, under the betterment act, just as is now done in improving facilities for internal communication. If this were objectionable, there is no reason why a dock corporation should not be formed, with powers assimilated to those of a railroad corporation, to extend and improve the means of communication between Boston and other seaports. owners of wharf property would probably be glad to join the corporation, putting in their wharves, and receiving stock in exchange; and when the corporation had acquired control, either in this way, or, in case of necessity, by eminent domain, over a sufficient water-frontage, it could issue bonds to raise money for improvements. The bonds would be doubly secured, by the value of the original property, as well as of the improvements, and, if the work could be done before Boston commerce had gone beyond the possibility of resuscitation, the enterprise ought to prove extremely profitable to the stockholders. Many a wharf in Boston, on deep water, furnished with good buildings, within a few hundred yards of the Custom-house, and with the tracks of the Union Freight Railway crossing the head of it, can be bought for a song, while in New York, and still more at Liverpool, the great steamship lines are obliged to find piers miles away from the business part of the town, in Jersey City, or Hoboken, or Birkenhead, for want of proper accommodation in a more desirable quarter.

HE profession has experienced a serious loss in the death of Mr. James Keys Wilson, one of the oldest Fellows of the American Institute of Architects, who has been identified with the best architecture in Cincinnati for many years. Mr. Wilson was born in Cincinnati in 1828, his family belonging to the pioneers of the city. He was educated as an

architect, and from 1855 to 1875 designed a very large number of buildings there, among them being the Sinton Building, the Shoenberger Mansion, the Jewish Synagogue on Eighth Street, the Mitchel Building and many other business structures and private houses. He was the first President of the Cincinnati Chapter of the Institute, and, a few years ago, was one of the most prominent candidates for the appointment of Supervising Architect of the Treasury Department.

No show how cheaply structural steel is now produced and sold in this country, the New York Evening Post publishes some comparative figures of prices at Liverpool and at Pittsburgh, including, in both cases, delivery on board ship or cars. For beams and channels, the Liverpool price ranges from \$26.75 to \$33 per ton, the average being about \$29. The Pittsburgh prices for the same goods range from \$28 to \$30.24 per ton. For angles, the Liverpool price averages \$26.81, while the price at Pittsburgh varies from \$25.76 to \$26.88, the average being thus less than for the Liverpool angles. Tees cost in Liverpool \$29.23 to \$31.67, and at Pittsburgh \$30.24. As the American structural steel is quite equal to the English, and probably better, it will be seen that, in this important material, the lowest level of prices has probably been reached. It is true that, within a year, some structural steel is said to have been sold at our mills for prices even lower than these; but this was in a time of great financial distress, and, as the mills are now full of orders, no more panic sales are to be expected. Whether any great advance will come in prices later, no one can say. bination among the rolling-mills, which for so many years held prices of structural metal at figures which must have paid an enormous profit, seems to have been effectually broken up; and it is to be hoped that the business may settle permanently on a basis of reasonable profits to all concerned. If it does, we may expect to see the consumption of structural steel and iron extend very rapidly, with, of course, advantage to all the allied industries, and still greater advantage to the owners of buildings and to the public.

THE coal-miners' strike of two years ago in England is having its sequel in a strike of the coal-miners' having its sequel, in a strike of the Scotch coal-miners. It will be remembered that the English miners won, as they said, their contention, gaining an increase of wages. Their Scotch brethren have demanded a similar increase, which has been refused. As usually happens in such cases, the Scotch miners have applied to their English fellows, whom they, no doubt, consider to be in affluent circumstances since their great victory; and the Englishmen, who would naturally like to see the cost of labor in the competing Scotch mines raised to a level with their own tariff, and who have no fancy for having the dissatisfied Scotchmen come over to seek work in the English mines, have responded to the call, and are forwarding subsidies regularly. The Scotchmen, being thus dependent on the English Miners' Federation for relief from starvation, do not dare to oppose the orders of the Englishmen, and their propositions to the mine-owners have, so far, been dictated by the English Miners' Federation. Neither the mine-owners nor the miners in Scotland take very kindly to this interference with their affairs, and, in some districts, the men have already abandoned their demands, and have gone back to work on the

IT is evident that the fact of having succeeded in a strike for higher pay makes the members of the successful organization objects of envy by their fellows elsewhere, and they are sure to be called upon for contributions to help out all the other strikers who can concoct a pretext for demanding them. It is very easy to enforce such a demand, by the threat that, if it is refused, the strikers will come in a body, and compete for work against their more fortunate brethren; so that the "successful" strikers have to pay dear to maintain their success, and the low schemers who manage labor organizations are adepts at extortion. Some time, we hope that the inner history of labor agitations may be written, and there is no doubt that the tale will contain some singular chapters.

HE English School of Archæology at Athens, which is entirely dependent for support on money raised for it by its friends, having no subsidy from the Government, is to be helped along next year, it is hoped, by the proceeds of the

performance, in London, of an English translation of the trilogy of Æschylus, the Agamemnon, the Choephori and the Eumenides. Professor Villiers Stanford, who has already composed music for the Eumenides, will prepare music for the two other plays of the trilogy, and will conduct the whole. Who is to design the costumes and accessories is not stated, but we hope that Mr. F. D. Millet will not be forgotten in the inquiry for some one to carry out this difficult task, which requires a scholar and an artist, and a good one of each, united in the same person. In order to provide with certainty for the expenses, a guaranty-fund of two thousand pounds is to be subscribed, but it is thought that it will not be necessary to call in the subscriptions, if the plays prove reasonably success-As the first attempt to interest the general public in Greek drama, the experiment will be closely watched on both sides of the Atlantic. There is so much of human sympathy in the great Hellenic tragedies, and the costumes and accessories, with a little of the real Grecian feeling, might be made so exquisitely beautiful, that one cannot help hoping, for the sake of the public, as well as of the managers and the School, that the effort may be crowned with complete success. The translating should be well done, or it will either miss the delicacy of the original, or be repulsively bold and strange; but, if this point is cared for, although we cannot expect the admirers of "1492," and similar masterpieces of dramatic art, to be attracted, the people who appreciate beauty, dignity and touching tenderness, and who are quite numerous enough in London to fill a theatre several times over, will be likely to take up Æschylus with enthusiasm, and to find themselves the better for it. If, as we hope, some of our readers will be able to find an opportunity to witness this interesting experiment, they can help and encourage the project by sending their names to Viscountess Maidstone, Hurst Monceaux Place, Hailsham, Sussex, England.

BUDAPEST, the capital of Hungary, has long been distinguished for the possession of the best electric railway in Europe, and is now to be endowed with an underground road, which, according to the account given in the Elektrische Zeitung, will far surpass, in ingenuity and completeness, anything of the kind in the world. In the construction of the tunnel, the pavement of the streets, which is of wood, is to be removed, together with its concrete foundation, and a trench is cut, wide enough to accommodate, when finished, two tracks, divided by a row of columns. The bottom and sides of the trench are lined with concrete, and iron columns set in the middle, thirteen feet apart. On these columns are placed longitudinal girders, which carry cross-beams; and between the cross-beams are turned concrete arches, on the so-called "Monier system." A stratum of concrete is laid on top of the arches, and covered with a sheet of asphalt; and over this is put more concrete, finishing with the regular wood-block pavement of the street. By these successive coatings it is expected that the infiltration of water from the street will be entirely prevented. The tunnel itself is rather narrow, so that, although the cars pass each other readily, there is only about four inches space between them and the sides of the tunnel; and the current is conveyed to the car-motors by means of lines of angle-irons, fastened to the sides of the tunnel, and forming continuous contact with projections on the sides of the cars; the return-current being carried through the rails. It seems as if there might be some difficulty in reconciling such a mode of conveying current to the cars with a comfortable arrangement of springs in them; but certain advantages are secured by means of it, in the way of automatic operation, which could hardly be obtained with a trolley-wire. So long as the conductor looks out for the regular running of his car, or train, he has nothing else to do. When the train approaches a station, the current is automatically switched off the motors, and the electric brakes are applied. As soon as the train is brought to a stop, alongside the platform of the station, the sliding-doors in the sides of the cars open automatically, and, at the same time, the brakes are released. So long as the doors remain open, the cars cannot start, but the shutting of the doors, which is done by the conductor, switches on the current, and the train moves on. The line is divided into blocks, about one hundred metres in length, and automatic switches are arranged in such a way that if a train arrives at a block on which another train is standing or moving, the current is switched off from the second train, and the electric brakes automatically applied to it.

THE LATE G. B. DE ROSSI, ARCHÆOLOGIST.



Jennie Turner's House, Philadelphia, Pa.

THE science of archæology has just suffered an irreparable loss in the person of the Commendatore G. B. de Rossi, whose reputa-tion was world wide. The illustrious savant has died at the of seventy-two, after a life absolutely devoted to science and art. There is no one who has studied Roman antiquities who does not know his work, and his book "La Roma Sotteranea Cristiana" is the text-book for all who interest themselves in the history of Christianity. Signor de Rossi was a tireless and conscientious worker, and while he pursued those higher studies which earned him a reputation, he also found time to write certain highly appreciated articles for the historical bulletins, and wholly with his own hand the Bullettino di Archeologia Cristiana which he had founded. His name is associated with all the important discoveries that have been made during the past fifty years. His works have been translated into all languages, and have been particularly commented on and digested by Spencer and Northcote, and so have made the circuit of the globe. His investigations were not restricted to religious antiquity; they embraced Roman topography and pagan epigraphy, thus enlarging the circle of historical studies. Momsen and Henzen were determined to have him as their collaborator on that monument of universal erudition which bears the title "Corpus Inscriptionum Latinorum."

He was attached to the Vatican Library and to the Christian Mu-He was attached to the Vatican Library and to the Christian Museum as Prefect, and the savants who came from every part of the world to consult the treasures contained in that vast library—unique in the world—gladly availed themselves of his courtesy and his knowledge. For them he was a guide at the same time learned and good-hearted. Two popes, Pius IX and Leo XIII, honored him with their protection and sympathy. The admiration that was felt for him was indicated in 1882, when his friends and pupils celebrated in the Christian Museum his sixtieth birthday and presented him with a gold medal and an album containing the autographs of the leading men of science in Europe and America, eager to testify to the consideration and gratitude they felt for him.

to testify to the leading men of science in Europe and America, eager to testify to the consideration and gratitude they felt for him.

His vocation for the study of Christian archæology declared itself in a very touching way. His father, a man of great piety, made him read each day the life of that saint to whom the day was assigned in the calendar. When his father took him to walk, he used to beg to be taken to the Roman Forum, the Colosseum, or the received herilance where the sight of the wine of these old huildings. ancient basilicas, where the sight of the ruins of these old buildings redoubled his love for things antique, and increased his desire to decipher the mysteries enclosed amid these débris of the past.

There are cited two instances of his lively and early inclination for studies of this kind: In 1835, when he was hardly thirteen years old, he went with his father and some of his friends to visit the Varican Library, where they met the celebrated Cardinal Mezzofanti who was showing to a family of foreigners the most precious of the codes contained in the collection. Having come upon an inscription which greatly impressed him with its beauty, he drew his note-book from his pocket and began to transcribe it, but a guardian, jealously observant of the rules, rudely snatched the book away from the young epigraphist. A long time after, when Signor de Rossi had become one of the most respected of the library's frequenters, the same guardian, grown old in office, shamefacedly recalled the incident and excused himself by saying that he never imagined that that curious

Some years later, he again returned to the Vatican with his father who frequently had to go there in his capacity of attaché of the Portuguese embassy, and while he was waiting for his father he began to copy a Greek inscription. Coming to a word he could not translate, he stopped short. Cardinal Mai, who had recently been advanced to the dignity of the purple and who was a Hellenist of the

first rank, chanced to pass just then and stopped beside the youth whose perplexity aroused his curiosity: having learned the cause of his embarrassment, he set himself to translate the inscription for him. But coming to the same word that had puzzled young Rossi, he, too, had to come to a standstill, for the word was a new one even to him. Cardinal Mai, because of this introduction, desired that a young man already so skilled in ancient languages should be attached to his service, and took him as a pupil. Later, he was allowed to descend into the catacombs with Padre Marchi, who was directing the excavations, and in this way he was enabled to penetrate into that world, at that time almost unknown, upon which he was destined to throw so much light. first rank, chanced to pass just then and stopped beside the youth

which he was destined to throw so much light.

The subterranean chamber under S. Prassede contained a great number of inscribed marbles stored there, together with the bodies of martyrs. On the twentieth of each July, the *fête* day of the saint, this crypt is illuminated and opened to the faithful. Now, on July 20, 1840, young Rossi repaired thither and began to copy some of these inscriptions in his note hook.

All at once some one rapped of these inscriptions in his note-book. All at once some one rapped him on the shoulder: it was Padre Marchi, who had come down to perform his devotions, and who wanted to know what Rossi was doing there, and was astonished at discovering that he had already copied there, and was astonished at discovering that he had already copied, with great exactitude, several hundred inscriptions. He begged him to take this material to the Museo Kircheriano, of which he was director, for he perceived that these notes might be the starting-point of a collection having capital importance. Rossi accepted the invitation, and at this interview were laid the foundations of that monumental work which contains the Christian inscriptions at Rome. From this moment, Rossi became the coadjutor and disciple of Padre Marchi. Rossi also had the satisfaction of accomplishing an incomparable volume on "Christian Architecture," which had a powerful effect in bringing about a revival of the study of religious powerful effect in bringing about a revival of the study of religious archæology. But his most important work is that by which he withdrew from the shades in which it had been enveloped up to that time the history of the primitive church, which had been wronged

by apocryphal traditions.

His idea was, first, to study the monuments of the early epochs, the vicissitudes of the Church, the statements of the writings of the times, its constitution and its relation with pagan society; then, by the aid of the catacombs and ruins, to reconstitute the topography of ancient Rome, and to discover in this underground labyrinth the tombs of the most illustrious and venerated martyrs. Thanks to his

unwearving activity, this dream became a reality.

In 1849, he discovered the inscription of Pope Cornelius which

was cited in the recital of Fabiola, and has had so good an effect in stimulating the English to study Christian archæology.

This first discovery, which disclosed the spot where the tomb of St. Calixtus was, was followed up by the great explorations which Pius IX authorized, which in time led to the discovery of the tombs of several popes and of St. Cecilia, as well as of a great many inscriptions and symbolical paintings. It was at this time that the reigning pontiff instructed him to write his "La Roma Sotteranea Cristiana," three volumes of which are already published, in which he has condensed all the scientific elements necessary for the historical and topographical reconstitution of the Roman catacombs and the interpretation of the monuments contained in them.

In proportion as he extended the domain of his discoveries in this underground world, so rich in precious documents, he conceived the project of disseminating his discoveries by means of a periodical publication which should keep the little world of savants posted on the discoveries he was making, and it was at this time that he founded the *Bullettino di Archeologia Cristiana*, which has been the journal of his efforts, for in it are given the accounts of all his discoveries from 1863 to the time of his death.

Of the colossal work on the Christian inscriptions, two volumes

have appeared and a third is now in press.

The monuments of the early ages had been illustrated in his "La Roma Sotteranea Cristiana," but there was need of a work, too, that should deal with the basilicas and churches of the succeeding epochs as well as with the Byzantine period. This lack Signor Rossi has made good with another colossal work on the "Mosaics in the Churches at Rome," i illustrated with chromolithographs, and this work fortunately is finished.

Besides these works of capital importance, this great archaeologist

Besides these works of capital importance, this great archæologist published a large number of dissertations on those matters which published a large number of dissertations on those matters which attracted his attention, and on consulting the "Album G. B. de Rossi," published, a couple of years ago on the occasion of the seventieth anniversary of his birth, one can discover that these writings having a bearing on history and Christian archæology number not less than three hundred. It was desired to signalize this anniversary occasion in some way, and for the purpose there was selected an oratory near the crypts of the ancient cemetery of St. Calistus, which Rossi had discovered and here in the presence of Calixtus, which Rossi had discovered, and here in the presence of representatives of archæological science from every part of the world was unveiled a marble bust of the archæologist, bearing the date April 30, 1892. In the "Album" I have just mentioned can be found the addresses delivered by the representatives of societies and academies in all parts of Europe and America, as well as a description of the ceremonies which formed a real triumph for this savant of noble birth.

As I said in the beginning, the death of Signor de Rossi has

^{1&}quot; Musaici Cristiani e saggi di pavimenti delle chiese di Roma anterioro al secolo XV."

inflicted on the whole world an irreparable loss. His knowledge, his assiduity, his rectitude, have increased the prestige and widened the horizons of archæological studies, so arid in all seeming, yet so fecund in their teachings, because of the light they shed on the facts and events from which is born a philosophy by which future generations will profit.

H. Mereu.

THE WHOLESALE ARCHITECT AS AN EDUCATOR.

IF Bulfinch were to be suddenly brought back to life and permitted to resume his honored position in the ranks of the profession, there would be one feature of architectural progress, so called, which would probably strike him as being very peculiar; namely, the enormous development of what might be termed the wholesale architect.

The time is quite within the memory of the modern practitioner when architecture was a profession limited to a very few individuals, a time when architectural publications were hardly thought of and the library of the average architect was limited to Tredgold and Vignola. Twenty-five years ago there was practically no art in this country. The Centennial Exhibition, with its vast array of object-lessons from abroad, awoke this country to a new life, and architecture with the other arts began to be popular. It is, however, only within the last fifteen years, indeed one might say only within the last decade, that an active and apparently permanent public interest has been evinced in the work of our profession. Our fathers seldom employed architects to build houses. That was the province of the mason. We hope our children will not even dare to lift a finger except under the architectural guidance of our successors.

Inger except under the architectural guidance of our successors. Now-a-days, architects are as numerous as the leaves in Vallambrosa, and the literature and current publications upon the subject are so plentiful and copious as to seemingly place imitative architecture within the reach of any one who wishes to think himself an architect. Furthermore, within the last few years there has sprung up in various parts of the country a brood of architects, if the name can properly be applied to such creations, who apparently make it their chief business in life to turn out designs for houses, churches and school-houses by the score and sell them in cheaply-bound volumes by the hundred. It is hardly possible to turn through the advertising papers or any magazine or newspaper of note without finding frequent advertisements of building plans; and to the professionally uneducated mind these advertisements are by no means lacking in suggestions of real value to the man or woman — especially the latter — who is building for the first time. Thus, one architect frankly admits that "some architects plan seventeen-story buildings. I never have; but I do draw little, cheap cottages, and beautiful ones. If you want a house, which because of its beauty will be a joy forever, send for this book. Price, 50 cents." Another advertises in the Century to send his beautifully-illustrated book of artistic houses for four cents. Another sells 180 complete plans for two dollars, and a Michigan architect advertises thirty designs for twenty-five cents. The limits of cost are clearly stated, the sample design accompanying each advertisement is usually sufficiently unimpeachable, and the purchaser of the publication risks very little money. The hard-working legitimate architect, so called, who grinds away with a different set of plans for every client and sometimes has trouble in wringing a bare five-per-cent commission from a reluctant property-owner, is very naturally moved to dire wrath when confronted with one of the so-called "art cottages

very successful in helping to prepare the way for a better development of architectural growth, for a better appreciation of an architect's functions, and for better opportunities for our profession.

Architecture is so essentially an adjunct of high civilization, at least in its personal relation to the architect, that the profession as a whole is sure to be benefited by anything which tends to the advancement of culture and civilization among the masses. Furthermore, although the individual sometimes fancies that he possesses intrinsic ability, that his art is sui generis, or that he is able to think beyond the scope of the ordinary mind, it is, nevertheless, a perfectly well established fact that only a very few times in a century is an intellect evolved or an artistic nature developed of sufficient force to reach beyond its generation. We are the slaves of our surroundings not only in our habits, our customs and our methods of life, but also in our ways of thinking, in our art, and in our sciences. Until the general average is raised, there can be little hope for personal achievements of any decided or far-reaching value in any of the lines of human thought or activity. Consequently, although we,

as architects, may think we know a great deal more than our clients, and can design much better houses than they can possibly imagine, filling them with what to them are unknown refinements and niceties, we very soon find that it is extremely difficult to get very much ahead of the current style, and that our most successful efforts when we look back at them in the future will appear to be but steps in the general progress of the community. We may keep on the top wave, may even lead the advance, but we do not get very far ahead, and, at the most, we are mere advanced pickets of the army of progress

Now it is safe to say that all of the development tending to the greater employment of architectural service has not come entirely as a result of the excellent achievements of the individual architects. It is also safe to say that the enormous supply of cheap architectural publications, issued for the sole purpose of selling plans by wholesale, has not sprung up simply because a few architects wanted to make money by the wholesale manufacture of plans and undertook to create a market by selling their wares very cheaply, but, rather, owes its existence to the fact that the common people who cannot afford to pay five per cent for an architect, or who do not appreciate the necessity of being told how to build their own houses, feel a desire for just the sort of cheap literature which our wholesale brethren are now so ready to supply. In other words, the demand has created the supply, and the quantity of such wholesale publications is evidence that thousands of people who build are seeking for light, and that the average house-builder in this country has reached a stage in artistic development where he is willing to pay at least something for professional advice, even though it reaches him in such an extremely attenuated condition. It is, therefore, perfectly evident that the wholesale architect acts — doubtless unconsciously, but not the less surely, as an educator of the masses, by giving something which, at least, may create a desire for a better article. The fact that so many seem to be satisfied with professional services so cheaply secured should not be accepted as evidence that the popular taste is stationary or becoming vitiated. If the people, who a generation ago felt no need for plans of any sort, are now buying them by the hundred, a generation hence these same people will appreciate an architect's full services, by a perfectly natural process of

Suppose a clerk with a salary of, say, fifteen hundred dollars a year has accumulated a couple of thousand dollars, and wishes to build a home. His first step may be to join some building-association or coöperative-bank, and with its help to become possessed of a small parcel of land. If he has no architects among his personal friends, very likely his next step will be to invest in three or four of the most conspicuously-advertised house-plan publications, and to supply himself with the miscellaneous array of badness which they present, with the result of probably selecting, in nine cases out of ten, the very worst of the whole lot as the scheme for his new home. If he is an intelligent man, before the foundations of his house are laid, he will begin to understand that house-building means more than the mere selection of plans from Somebody's Monthly. Later on, he will appreciate that there are difficulties in the mere business operations associated with building which may be somewhat harassing to a dry-goods' clerk or butcher's apprentice. And, finally, when the house is all finished, if, as is very likely, he is a man who reads the magazines, gets occasional glimpses of the Art Museum, and perhaps occasionally listens to a lecture on art, he will discover that there are, at least, a few particulars in which his house might be improved in an artistic sense, and that house plans at seventy-five cents per hundred are not always perfect. He may even get to five cents per hundred are not always perfect. He may even get to five as to appreciate that his site and his house should have some relation to each other, and that it is not sufficient to merely select a design which on paper looks most pleasing, but that the circumstances, the plan and the external appearance might possibly be studied to advantage together. Being a sensible man, it will not be strange if the next time he wants to build, or the next time his friend wants to build, or the next time his friend wants to build, or the next time his friend wants o

An experience of this sort, repeated a thousand times over in different parts of the country, cannot fail to have a distinct educational value upon the mass of people who are obliged from circumstances to build and occupy cheap houses, and the function of the wholesale architect as an educator would be of distinct value if it went no farther, but, fortunately, it acts in both directions. The cheap architectural publications influence not only the deluded being who buys them to build himself a house therewith, but they

very often have a distinct influence upon the conscientious architects who, by business limitations, are confined to the humbler lines of the profession. There are so many bright, clever young men whose services can so easily be secured, for a consideration, to give style to the work of the wholesaler, that the published designs in some cases are far from bad in the abstract. The publishers fully appreciate that the taste of the average house-builder, when once aroused, is keen, if uncultivated; and the standard of design is constantly being raised. The architect who is called in to design an inexpensive house for an individual client finds himself confronted by these cheap publications, and is obliged to show that he is superior to such productions. Unfortunately, the result does not always justify the assumption, for all of the bad designs are not limited to the pages of such architectural publications, and some of the worst examples of the vernacular are perpetrated by architects who ought to know better, but do not. Still the effect of the wholesale architect remains the same, and any one who has designed a number of cheap wooden houses must admit that the presence of the work of our wholesale brethren is a spur to better efforts on our

Therefore, although we may with perfect justice deride the result, and feel a legitimate contempt for talent which is so prostituted, let us be, at least, charitable in judging of the work of men who are often perfectly sincere, who intend to give the public full value for what it pays, and in the main succeed in doing so, and to whom, after all, we indirectly owe no inconsiderable share of the public intelligence, the general taste, the wide-spread appreciation which to-day makes architecture so honored as a profession, and which has prepared the way for the opportunities we are permitted to improve.

C. H. BLACKALL.

THE INFLUENCE OF THE HANSEATIC LEAGUE ON THE ARCHITECTURE OF NORTHERN EUROPE.¹—III.



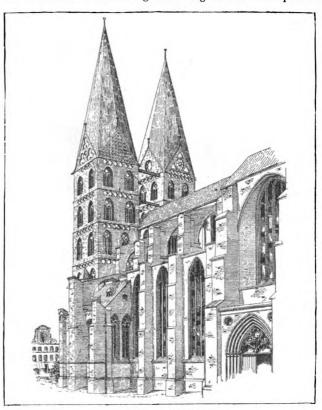
St. Patroclus's and St. Peter's, Soest.

HAVE already mentioned that the peculiarity of the westward radiating buttresses is only to be found, outside the Baltic provinces, at Westminster Abbey; but I would not in the least suggest that this is due to Northern influence. At the same time, this peculiar feature—the greater width across the chapels than across the choir, also very German, the eccentric and perfectly un-French plan of the chapels (six sides of an irregular decagon)—associated with the fact that at the very time Westminster choir was building, Henry III was permitting the Hansa League to erect its storehouses in London,

was permitting the Hansa League to erect its storehouses in London, all taken together form a coincidence at least remarkable.

Although in the Baltic style the arrangement of radiating chapels had been worked out in its own way, and was for long an essential feature in the more important churches, side by side with it was growing up another characteristic form which eventually led to its almost total abandonment — I mean the gable. In French buildings the gable never assumed very great importance, but in German architecture it became a prominent feature; and in the formation of the towers and spires of the early buildings it played a leading part.

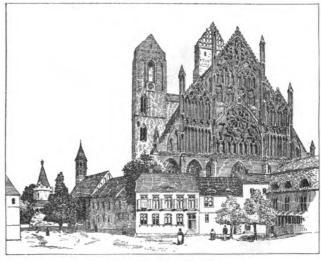
Of the way in which the spire form became gradually perfected we have the well-known examples of Paderborn and Soest, for the earliest periods, which afterwards became stereotyped in the forms we see at Lübeck and Luneburg and throughout the Baltic provinces



St. Mary's, Lübeck.

during the best periods of the style. But the gable alone was afterwards preferred to the spire, and the architects adopted the simple double-gabled saddle-back tower through all the last phases of the double-gabled saddle-back tower through all the last phases of the style. By the omission of the clerestories, and construction of the aisles of equal height, the gables of the churches became of enormous size, and these presented so wide a field for the panelled decoration so dear to the Baltic artists as to lead gradually to the extinction of the chevet altogether. One of the finest examples of the transition is the east end of Prenzlau, where the three aisles are terminated with shallow apses grouped together outside and gathered over so as to bring the upper surface of the gable to a level, which is covered with intricate tracery, all in brick, standing free from the surface of the wall, and producing a most rich effect in light and shade. In a later example at Neubrandenburg the gable is as richly covered with tracery, and the apses have been altogether omitted.

Of gables at the west end of the churches, where there were no towers, perhaps the most complete and satisfactory example is that of the Church of St. Katherine at Lübeck, which was rebuilt in 1531.



Prenzlau: the East Gable.

Here there are no sham walls or meaningless tracery spread over the surfaces, and although the two great windows may seem excessively lofty and attenuated, yet they are no larger than required to light the interior, and their peculiarities are but characteristic of the

¹ Read at the general meeting of the Royal Institute of British Architects, Monday, May 28, 1894, by J. Tavenor Perry, [A] and published in the *Journal* of the Institute. Continued from No. 981, page 13.

brick manner of construction. So fond were the Baltic architects of the effect of these lofty mullions that they frequently prolonged them downwards over the blank wall space which concealed the aisle roofs, as at St. Nicholas's, Stralsund, and St. Peter's, Malmoe; but the



difficulty of supporting such thin and lofty erections in brickwork, especially where they carried tracery above, resulted in the frequent substitution of two tiers of windows in the same wall-face, suggesting,

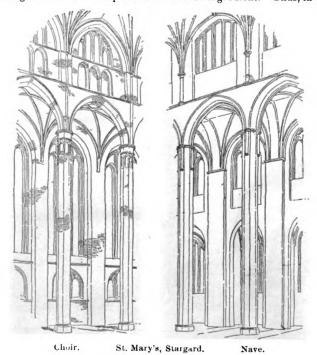
Neubrandenburg.

from the outside, the gallery of a dissenting chapel, as at the Church of St. John, Stettin, and St. Mary's, Stargard.

So enamored of the gable form did the architects of the style become that it was considered in itself a decoration, and house-fronts, gate-towers and roofs of all sorts were finished with gables. Where this was a natural termination to a roof, or where fair opportunities for gable terminations were created, as at Neubrandenburg or Bruges, the treatment was legitimate and satisfactory; but where, as at St Katherine's, Brandenburg, or the fronts of the great Town-Halls of Lübeck and Stralsund, the gabled fronts were merely a screen-work, solid or pierced, bearing no relation to the roofs behind, they became

not only unmeaning, but ugly.

Whatever the demerits of brick as a building material, from an architectural point-of-view, may be, in one particular it had great advantages over stone. It was too inexpensive to suggest for its saving the use of a cheaper and commoner ingredient. Thus, in the



great and lofty piers which are found throughout the Baltic provinces, we find they are built solid of one homogeneous material, and not, as were so many of our own mediæval piers, of rubbish faced up with a hin shell of stone. These great brick piers are a very noticeable

feature in the style, and are most marked in those churches where the nave and aisles are of equal height. They are frequently richly moulded, as at St. Nicholas's, Stralsund, and Neubrandenburg, but

the more usual form is a simple octagon.

At first the rich decoration of the wall-surfaces by deeply moulded and traceried arches, although in no way arising out of the construction, produced a very ornamental effect; and where assisted by glazed bricks of various colors, as at St. Mary's, Stargard, the Townhall, Hanover, and other places, it was often beautiful. These arches, in the lightness of their tracery and their slender mullions, may indeed in a degree have suggested such light arcading as the arches, in the lightness of their tracery and their slender mullions, may, indeed, in a degree, have suggested such light arcading as the double tracery on the west front of Strasburg Cathedral. The enriched fronts of the barbicans of Neubrandenburg, with their elaborate foliations and crocketed gables, however incongruous such decorations may appear in the works of a fortification, are architecturally most satisfactory; but the reverse is the case in the great church of the same town, where the gables and spire are covered with meaningless attenuated tracery bearing no conformity to the parts of the building to which they are applied. From the cheapness of the materials used, and the facility the builders acquired in dealing with this mode of decoration, it quickly degenerated into a dealing with this mode of decoration, it quickly degenerated into a series of panels of arches or circles, sometimes moulded and cusped, but generally plain, often having the background covered with a coat of plaster for painted armorial decorations. This panelling is found throughout the Baltic provinces repeated on towers, churches and houses in a wearisome manner. How far the flintwork arcading of our eastern counties may have been suggested by this, one cannot

say, but in many cases it produces an equally monotonous effect.

As the Gothic forms of the Baltic style gradually gave way before the Renaissance, these two principal local features—the gable and the - assumed increased importance; and in the lofty housearcading—assumed increased importance; and in the long house-fronts of the cities, and the huge castles erected in North Germany before the outbreak of the Thirty Years' War, these features in semi-Classic guise are the most noticeable. On the pages of Fritsch's great work a large number of these are depicted; and the old towns all round the Baltic are still full of beautiful examples of German Re-naissance to numerous to mention. It is doubtless due to the attennaissance too numerous to mention. It is doubtless due to the attention which has been drawn to them, and to the appreciation of their immensely picturesque qualities, which has led to that revival of Renaissance Art in this country meaninglessly described as "Queen Anne," but which is merely an approximation to that form of the Renaissance practised in the Baltic provinces in the last days of the Hanseatic League.

APPENDIX I. - LISTS OF THE TOWNS COMPRISING THE HANSEATIC LEAGUE AND OF TOWNS IN FOREIGN COUNTRIES ALLIED TO THEM. COMPILED FROM PROFESSOR G. DROYSEN'S Historischer Handatlas.

I. TOWNS OF THE LEAGUE.

Wendland and Pommern. - LUBECK, Head of the League. GRIEFS-Wendland and Pommern.— Lubeck, Head of the League. Griefswald, Hamburg, Rostock, Stralburd, Wismar. Anklam, Colberg, Demmin, Golnow, Grieffenberg, Grimmen, Kiel, Rugenwald, Stettin, Stolp, Treptow, Tribsees.

Saxony.— Bremen, Brunswick, Goslar, Magdeburg.
Ascherleben, Buxtehude, Eimbeck, Gottingen, Halle, Halberstadt, Hameln, Hanover, Hildesheim, Luneburg, Osterode, Quedlinburg, Saltzwedel, Stade, Uelzen, Wern.

Markland.— Berlin, Brandenburg, Coeln, Frankfurt a. O., Havelberg, Kyritz, Oardelegen, Osterburg, Perleberg, Pritzwalk, Seehausen, Stendal, Tangermunde, Werben.

Livonia.— Dorpat, Reval, Riga.
Fellin, Pernau, Wenden, Wolmar.

Sweden.— Wisby.
Calmar.

Sweden. — Wisby.
Calmar.
Calmar.
Metherlands. — Amsterdam, Arnheim, Bolsward, Deventer, Dollart, Elborg, Groningen, Harderwijk, Hasselt, Hindelopen, Middleburg, Nimwegen, Staveren, Utrecht, Zwolle, Zutphen.

Prussia. — Dantzig, Elbing, Koenigsberg, Thorn.
Braunsberg, Culm.

Westphalia. — Cologne, Dortmund, Munster, Soest.
Bielefield, Coesfield, Duisburg, Emmerich, Hamm, Hervord, Höxter, Lemgo, Lippsstadt, Minden, Osnabruck, Paderborn, Roremond, Unna, Venlo, Warburg, Wesel.

II. ALLIED TOWNS IN FOREIGN COUNTRIES.

England. - LONDON, Boston, Hull, Ipswich, Lynn, Norwich, Yarmouth,

Flanders. — Bruges, Antwerp, Damme, Dinant, Ghent, Ypres.

Denmark. — Copenhagen, Falsterbo, Flensborg, Helsingborg, Helsingör,
Malmoe, Roeskilda, Skanör, Svenborg, Warberg.

Norway. — Bergen.

Norway. — BERGEN. Russia. — Novgorod, Kowno, Pskov.

APPENDIX II. - THE CHRONOLOGY OF THE HANSEATIC LEAGUE. B. C.

809 Hamburg founded by Charlemagne.

950 Jomsborg, or Jullin, on the Island of Wollin founded by Harald

Gormson. 979 London. Privileges granted by Etheldred to German merchants to trade there. 1143 Lübeck founded.

1150 Novgorod established as a free republic.1158 Lübeck ceded to Saxony.

^{1&}quot;Denkmäler Deutscher Renaissance," K. E. O. Fritsch.

- 1163 The Oldenburg bishopric transferred to Lübeck by Duke Henry of Saxony.

 1164 The Dom of Lübeck consecrated.

 1177 Jomsborg destroyed.

1190 The Teutonic Order founded by three knights of Bremen and two of Lübeck.

1209 Stralsund founded.

- of Lübeck.

 1209 Stralsund founded.

 1226 Wisby. First treaty made between the German merchants resident here and the German traders from mainland.

 1226 Lübeck declared a free imperial city by the Emperor Frederick II.

 1227 Lübeck attacks the Danes in the battle of Bornholm.

 1234 Lübeck destroys Danish naval supremacy in engagement at the mouth of the Trave.

 1241 Hamburg and Lübeck enter into treaty to protect the roads from Travemunde to the Elbe. (This is regarded as the date of the complete establishment of the Hansa League.)

 1250 London. The Hansa storehouses erected.

 1250 Bergen. Treaty made with Hakon of Norway for establishment of League in Bergen.

 1252 Bruges. Storehouses erected, and the League as "Merchants of the Roman Empire" established in Flanders.

 1253 Damme. Roger of Lübeck and Jourdain of Hamburg obtain special privileges for the League in Damme.

 1259 London. Henry III confirms the privileges of the League.

 1270 Novgorod. Storehouses erected.

 1271 Novgorod. Joins the League.

 1272 Nons. Storehouses erected.

 1273 London. Troubles between the German merchants and the citizens as to the cost of repairs to Bishopsgate.

 1348 The League attacks Denmark.

 1361 Wisby destroyed by the Danes. Consolidation of the League by the Danish War. From this time the assemblies of the League

- citizens as to the cost of repairs to Bishopsgate.

 1348 The League attacks Denmark.

 1361 Wisby destroyed by the Danes. Consolidation of the League by the Danish War. (From this time the assemblies of the League become regular.)

 1367 The League meets at Stralsund.

 1370 Peace of Stralsund by treaty between the League and Waldemar of Denmark, which "induced close relations between the League and the Teutonic Order." (At this time the League was at the height of its power and embraced sixty-four confederate and forty-four allied cities.)

 1395 Treaty with Denmark when Albert surrendered to the League.

 1426 War between the League and Denmark.

 1448 War between the League and England.

 1458 Bergen. The German merchants attack the king's governor and burn him and his men in a church, by which the influence of the League in Norway is much increased.

 1474 The privileges of the League in England restored.

 1475 Novgorod captured by the Russians, and the League ejected.

 1479 London. Bishopsgate rebuilt by the German merchants.

 1537 Lübeck. Fall of the Bürgermeister Jorgen Wollenvever. (From this time the power of Lübeck rapidly decays.)

 1550 The Kontor of Boston suppressed.

of Bishopsgate.
1552 London. Privileges of the League revoked.

1619 Outbreak of the Thirty Years' War and gradual decay of the supremacy of the League.

THE EFFECT OF FROST ON GREEN MASONRY.

URING the construction of the new theatre in Zurich, Switzerland, it became necessary to carry on part of the masonry during the winter. The contractors obtained advice from several sources as to the manner in which the work should be done, but as the recommendations were very diverse the Austrian Society of Engineers and Architects, which has made a special study of cements, limes and mortars, was asked to recommend a course of procedure. The matter was turned over to the Cement Committee, and this body instituted a series of experiments, which are described in the following free translation made by the *Illustrated Carpenter and Builder* from the report in the Society's journal.

The experiments were made in two ways, the first with brick masonry and the second with rubble masonry, using stone of two kinds. This appeared desirable in order to determine if there were any difference in materials which were unlike hydroscopically. The materials used were dry and free from snow and ice, and the mortar was mixed as stiff as possible. The limes and cements were all tested in the municipal experimental-station according to the system

The separate pieces of brick wall tested were about 3.28 feet long, 6.56 feet high, and 12 inches thick, and were made with lime, Roman cement, Portland cement, mixed lime and Portland cement, and slag cement. The test walls made with these five mortars were laid with unwarmed water from the city mains and with water warmed to a temperature of 77° Fahrenheit. A series of tests were also made with Roman and Portland cements and cold water to which serves per cent of its weight of cookingsalt had been added. All seven per cent of its weight of cooking-salt had been added. All mortars were made with one part of the cementing material and two parts of sand. In the mixed mortars twice as much lime as Portland cement was used. The lower half of the walls was partly protected by timbers, but the upper portion was entirely exposed. A few tests were also made with brick masonry laid with Hausleitner's

The test blocks of rubble masonry were 3.28 feet long, 6.56 feet high and 16 inches thick. The stone used was partly limestone and partly sandstone. These blocks were laid with lime-mortar, Roman-

cement mortar and Portland-cement mortar, mixed with cold and hot water and cold brine as before.

The brick walls were started the last part of December, when the temperature was 26° Fahrenheit, and the fourteen pieces were finished in about three weeks. The temperature of the air was finished in about three weeks. The temperature of the air was taken three times daily until the middle of April, the lowest temperature being on January 2, when three degrees above zero Fahrenheit was registered. The walls were pulled down June 6. It was at once apparent that those pieces of masonry laid with mortar containing lime had suffered more from the frost in the exposed upper part than in the portions protected by timbering, since in the former the mortar had plainly been frozen. The following remarks give an idea of the condition of the walls, as revealed by an examination of the joints with a sharp iron:

1. Lime-mortar mixed with cold water. The mortar in the joints

1. Lime-mortar mixed with cold water. The mortar in the joints had hardened but feebly, and the bricks could be pulled apart by hand without exercising any noticeable amount of strength.

2. Lime-mortar mixed with warm water. The mortar in the

joints had hardened feebly, and there was no adhesion between the bricks and mortar.

3. Roman-cement mortar mixed with cold water. The mortar in the outer and inner joints had hardened moderately, and there was

considerable adhesion between the bricks and the mortar.

4. Roman-cement mortar mixed with warm water. The joints were quite brittle, and the inner portion of the mortar not particu-The joints well hardened; the adhesion between the bricks and mortar was quite good. The part of the walls protected by timbers was in better condition, and excelled any of the preceding walls.

5. Portland-cement mortar with cold water. The joints were hard and the mortar clung well to the bricks. The protected part was better than the other, in this case.

6. Portland-cement mortar with warm water. The joints were hard, the mortar adhered well, and the entire piece of wall was a little better than any of the preceding.

7. Lime and Portland-cement mortar mixed with cold water. The mortar was badly mixed, brittle and crumbling, but adhesive.

8. Lime and Portland-cement mortar mixed with warm water.

The mixture was uniform in this case, but the mortar was brittle and not well hardened in the interior, although adhesive.

9. "Frostproof" Roman-cement mortar mixed with cold water.

The mortar was well hardened, and there was a good adhesion between it and the bricks. A plaster of the same material put on a part of the wall at the request of Herr Hausleitner was thoroughly

part of the wall at the request of Herr Hausleitner was thoroughly hard and without sign of injury.

10. "Frostproof" Roman-cement mortar mixed with cold water. This mortar was well hardened and adhered very well to the bricks. A plaster of the same material was thoroughly hard and without defects.

11. Wittkowitz slag-cement mortar with cold water. The joints was brittle and the certar full into little partials where we have been supported.

were brittle, and the mortar fell into little particles when scratched out with the iron. The inner parts which had hardened somewhat

were crumbling, and showed but a slight adhesion to the bricks.

12. Wittkowitz slag-cement mortar with warm water. The condition of this wall was but slightly better than of the last noted.

13. Roman-cement mortar mixed with cold water to which seven er cent of salt had been added. The mortar was brittle and per cent of salt had been added. The m-crumbling, adhering but slightly to the bricks.

14. Portland-cement mortar mixed with cold water to which seven per cent of its weight of salt had been added. The mortar was well hardened throughout, and adhered well to the bricks.

The masses of rubble masonry were built on a succeeding year, being started on December 28 and completed about two weeks later, the temperature ranging from 7° to 25° Fahrenheit. The blocks were examined on April 7, and were found to be in the following condition:

LIMESTONE RUBBLE.

The mortar was com-1. Lime-mortar mixed with cold water. The mortar was pletely frozen and brittle, without any adhesion to the stones. block had fallen completely.

2. Lime-mortar with warm water. The mortar was entirely frozen, brittle and without adhesion.

- 3. Roman-cement mortar with cold water. The mortar had hard-
- ened pretty well, but had not the slightest adhesion to the stones, which could be removed from their beds without injuring the latter.

 4. Roman-cement mortar with warm water. The mortar was quite well hardened, but did not adhere in the slightest degree to the stones.
- 5. Roman-cement mortar mixed with cold water and salt. In this block there was a partial adhesion between the stone and cement, and the latter had hardened somewhat better.
- 6. Portland-cement mortar with cold water. The mortar had hardened very well, and the adhesion between stones and mortar The mortar had

7. Portland-cement mortar with warm water. The conditions were the same as with the last block, although the adhesion may

have been a trifle greater.

8. Portland-cement mortar mixed with cold water and salt. The mortar was very hard, and adhered to the stones very well. The tearing down of the wall required considerable strength and necessitated the use of bars and other tools.

SANDSTONE RUBBLE.

1. Lime-mortar with cold water. The mortar was entirely frozen, brittle, easily broken and without a trace of adhesion to the stones.

2. Lime-mortar with warm water. The condition of this block

was the same as that of the first.

3. Roman-cement mortar with cold water. The joints were badly frozen, the mortar crumbling and slightly hardened. There was no regular adhesion between it and the stones.

4. Roman-cement mortar mixed with warm water.

was in the same condition as the last.

5. Roman-cement mortar mixed with cold water, to which salt had been added. The mortar was well hardened and adhered fairly to the stones.

6. Portland-cement mortar with cold water. The mortar was well hardened, but its adhesion to the stones was only partly good.

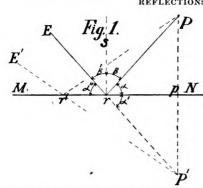
The conditions 7. Portland-cement mortar with warm water.

were much the same as in the last block.

8. Portland-cement mortar mixed with cold water to which salt had been added. The mortar had hardened very well, and adhered firmly to the stones. The block could not be broken apart without

The conclusions of the committee from these experiments are that ir brick masonry laid in frosty weather, mortars into which any part of lime enters should not be used. Roman-cement mortars behave fairly well under such conditions, and Portland-cement mortars give good results. The use of warm water gave somewhat better results, and salt materially increased the resistance to frost. With rubble masonry, using either sandstone or limestone, lime-mortar was entirely out of place, and Roman-cement mortar gave poor results unless mixed with salt. Portland-cement mortar behaved well, especially with the addition of salt. The final recommendation of the committee is that in laying brick or rubble masonry in winter, only Portland-cement mortar should be used, mixed with salt if

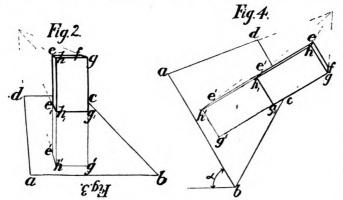
SOME CONSTRUCTIONS IN LINEAR PERSPECTIVE.1—II. REFLECTIONS.



ONSTRUCTIONS on reflections from plane mirrors are based upon a simple law, viz: The incident and reflected form equal with the normal to the surface at the point of incidence.

This law is illustrated in Figure 1. Let E represent the position of the eye of the observer, and P a point whose reflec-tion at a mirror represented by the line $M \dot{N}$, is

sented by the line $M\dot{N}$, is required. From P draw $P\,p\,P'$ perpendicular to M N making $p\,P'$ $=p\,P$. Draw $E\,P'$ intersecting M N at r. Join $P\,r$; and draw $r\,s$ perpendicular to M N. Since $p\,P = p\,P'$ the right angled triangles $P\,p\,r\,P'\,p\,r$ are equal; therefore x=x'. But x' is equal to the opposite vertical angle x''; therefore x'=x''; therefore B=B'. A ray of light passing through P and reflected to the eye at E must, according to the law, pass through the point r, which is situated in the straight line $E\,r\,P'$. The perspective of r is the same point as the perspective of P'. If, then, we wish to represent the reflection of any point P, the problem is resolved into the very simple one of representing a point P' which is supposed to be situated on the other resenting a point P' which is supposed to be situated on the other side of the mirror, p P' being equal to p P. This statement is true whatever may be the position of the eye of the observer. For if E

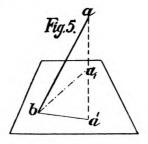


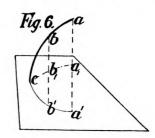
be moved to any other position E', while r will move to r', the position of P' will not change.

Let a b c d (Fig. 2) be the perspective of a horizontal mirror, and $e f g g_1 h_1 e_1$ the perspective of a prism standing upon it. The reflec-

1 Continued from No. 925, page 174.

tions of the points e, h and g are respectively e', h' and g' in the prolongations of the vertical edges of the prism, making $e_i e' = e_i e$, h, h' = h, h and g, g' = g, g. The reflection $e_i e' h' g' g, h$, is the perspective of an inverted prism which is *supposed* to be situated on



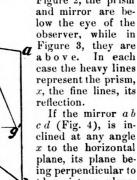


the other side of the mirror, two sides of the bases of the real and imaginary prisms being represented by the common lines e, h,

and h, g.

If the mirror and the prism are inverted (Fig. 3), we make a similar construction. It will be seen that Figure 3 is obtained by revolving the drawing (Fig. 2) through an angle of 180°. In Figure 2, the prism Figure 2, the prism

Hg.7.



low the eye of the observer, while in Figure 3, they are In each above. case the heavy lines represent the prism, x, the fine lines, its reflection. If the mirror ab cd (Fig. 4), is inclined at any angle

the picture - plane, the construction is similar to that of Figure 2. In each of these illustrations the mirror is rectangular in outline, two sides $a\ d$ and $b\ c$ being perpendicular to the picture-plane, and two sides $a\ b$ and $d\ c$ parallel to the pictureplane. The angle x is shown in perspective in its true value. The long edges of the prism $e e_i$, $h h_i$ and $g g_i$ are perpendicular to a b or $d c_i$, and the reflection $e_i e' h' g' g_i h_i$ is the perspective of the prism

To find the reflection of any straight line, a b (Fig. 5), one end of which, b, rests upon the mirror which is horizontal.

Drop a perpendicular from a, the other extremity of the line, and

find the point a, in which pierces the mirror. Produce $a a_1$ to a' making $a_1 a' = a_1 a$; b a' is the reflection of the line

 $e e_i h_i g_i g f$ inverted.

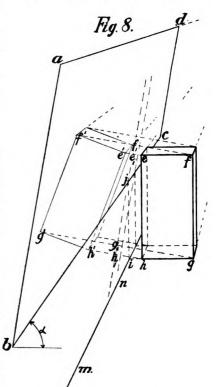
To find the reflection of any curved line abc (Fig. 6), one end of which, viz c, rests upon the mirror.

Drop perpendiculars from points a, b, etc., and find the points a, b, etc. where they pierce the mirror. Produce a a, $b b_i$, etc., making $a_i a' = a_i a$, $b_i b' = b_i b$, etc.; a' b' c' drawn through these points is the reflection of

To find the reflection of a pyramid efgh (Fig. 7), the mirror abcd being perpendicular both to the horizontal and picture planes.

From o, the centre of the base, draw o o, o' parallel to the horizon, making $o_1 o' = o_1 o$. Draw

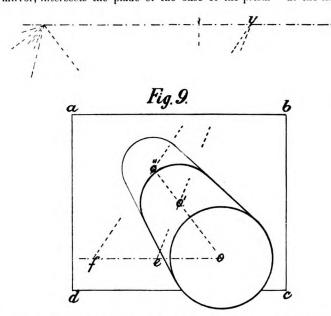
the perpendicular o'e' =oe; produce fi and gh respectively to i' and g', making i, i' = i, i, h, g' = h, g and h, h' = h, h; e'i'h'g' is the reflection of the pyramid.





To draw the reflection of a prism efgh (Fig. 8), the mirror abcd being perpendicular to the picture-plane, and inclined at any angle x to the horizontal plane.

A vertical plane through $b\,c$, the lower horizontal edge of the mirror, intersects the plane of the base of the prism — at the line



 $m\,n$. Produce $g\,h$ to i; erect the perpendicular ij intersecting $b\,c$ at j. Through j draw f,h, parallel to $a\,b$ or $c\,d$. From $f\,e\,g$ and h draw perpendiculars to f,h, intersecting the mirror in this line at f,e,g, and h,j; make f,f'=f,f,e,e'=e,e,g,g'=g,g and h,h'=h,h. The rectangles $f\,e\,h\,g$ and $f'\,e'\,h'\,g'$ are symmetrical with respect to the axis f,h. In a similar manner the parallel face of the prime is treated and the reflection completed. the prism is treated and the reflection completed.

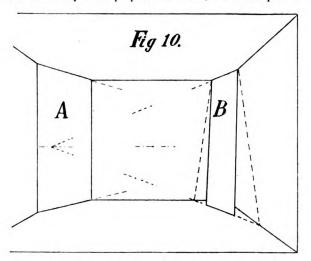
To draw the reflection of a right circular cylinder whose axis is perpendicular to the picture-plane (Fig. 9), the mirror abcd being parallel to the picture-plane.

In this figure the base of the cylinder, the perspective of whose centre is o' coincides with the mirror. Produce the axis o o' to o'', making o' o'' the perspective of a line which is equal to o o'. To do this, through o draw o f parallel to the horizon. Lay off o e = e f any convenient measurement. Draw e o' and produce it until it intersects the horizon at v. Draw f v intersecting o o' produced at o'', the centre of the circle which limits the reflection. The radius of this circle is found by drapping a perpendicular from o'' to either tersects the horizon at v. Draw f v intersecting o o' produced at o", the centre of the circle which limits the reflection. The radius of this circle is found by dropping a perpendicular from o" to either of the tangents which represent the extreme elements of the cylinder, and which vanish in the point of sight.

In each of the illustrations from Figure 2 to Figure 8 inclusive—equal measurements on a line perpendicular to the mirror are equal in perspective, and this is true whenever the mirror is perpendicular to the interest of the richard significance is in made on a line perpendicular.

to the picture-plane, since it is made on a line parallel to the picture-

In Figure 9, since the mirror is parallel to the picture-plane and the axis of the cylinder perpendicular to it, while that part of the



axis produced represented by o' o" is in space supposed to be equal to the part represented by o o', the perspective o' o" is not equal to

The cases which we have not considered are first (Fig. 10), when the mirror is vertical, and neither perpendicular nor parallel to the picture-plane; and second, the most general case that can be considered, viz. when the mirror is not perpendicular to the horizontal

or picture planes.

These cases involve constructions which are not as simple as those which appear in this paper, and will be studied to better advantage after certain other constructions have been explained.

F. R. H.

THE WATER-WORKS OF NAPLES.

M. CONSUL at Naples says that the supply of pure water conveyed to the city by the Naples Water-works Company has been of such immense benefit to the sanitation of the city, that the manner in which this supply is obtained may be interesting to record. Since the opening of the works not only the needs of Naples have been regularly and abundantly provided, but the supply has been copious enough to furnish many of the adjoining communes and islands in the Gulf of Naples with good water, when such communes and islands were afflicted with epidemic diseases, arising from an insufficient and generally impure supply of drinking-water. The supply comes from the springs of Urcinoli, in the valley of Serino, about thirty miles nearly due east of Naples, and 1.080 feet The supply comes from the springs of Urcinoli, in the valley of Serino, about thirty miles nearly due east of Naples, and 1,080 feet above the level of the sea. It was originally proposed to utilize also the springs of Acquaro, situated in the same valley about 140 feet higher up, but on the first-mentioned springs being enclosed, it was found that in the driest season they furnished the amount stipulated for in the contract with the municipality, viz, a minimum of 37,000,000 gallons a day. The passage of water through the aqueduct is accordingly limited to 440 gallons a second. The consumption of Naples is calculated at 44 gallons a day per head (in comparison, it may be noted that the average consumption per head in London was given by the Royal Commission at 31 gallons per head), which, with a population of 50,000, only amounts to 22,000,000 gallons; consequently, at present, 16,000,000 gallons of water run to waste. In case, however, of still more water being required, the springs of Acquaro and Pelosi still remain untouched, and could be brought into requisition. The geological formation of the ground at the springs consists of an impermeable stratum at a depth of 40 feet; aqueous stratum 10 to 12 feet thick, composed of depth of 40 feet; aqueous stratum 10 to 12 feet thick, composed of sand, shingle, and calcareous rock, covered and protected by a constant crust of black volcanic sandstone; and above this, vegetable earth and gravel. The subterranean waters are derived from distant parts of the mountainous region, by which the valley is surrounded. Two mountain torrents, which traverse the tract of land above described, have been floored and walled with concrete to prevent their currents from mingling with the springs. An area of 35,000 square yards to 40,000 square yards of the aqueous sand has 35,000 square yards to 40,000 square yards of the aqueous sand has been drained by means of three collecting channels, about 6 feet high and 5 feet wide, which have a total length of 563 yards. They are generally placed either in the tufa or at the top of the aqueous stratum. The bottoms of the conduits are made porous, and a considerable space outside the walls of each channel is packed with broken limestone. Over the whole are two layers of beaten clay, with a layer of cement between, so that the surface-water cannot penetrate the system. Above this, earth is filled-in to the general level of the area. The water that flows into and through these channels is very pure, and of the average temperature of 12° Centigrade. The conveyance of this large quantity of water to Naples is effected as follows: A covered masonry canal lined throughout with Grenoble cement, laid generally at a depth of three feet below the surface of the ground, but sometimes through tunnels under the hills, doubly placed along aqueducts raised 66 feet over valleys, and once changing into four parallel iron tubes, 22 over valleys, and once changing into four parallel iron tubes, 24 feet wide, which descend into the valley of Cronti, and rise on the feet wide, which descend into the valley of Cronti, and rise on the opposite side, having, at the lowest point, to resist a pressure of seven atmospheres, conveys the water for a distance of 37 miles into two covered reservoirs on the hill of Cancello, about 12½ miles distant from Naples. The reservoirs are at the respective elevations of 68 and 444 feet. The power of the fall of water from Cancello into the plain is calculated at 2,900 horse-power, and might be easily utilized for the production of electricity. From these reservoirs three iron syphons proceed down into the plain, and up into the hill of Capodimonte, which dominates Naples. The longest of the three syphons measures more than 14 miles from end longest of the three syphons measures more than 14 miles from end to end; it debouches into the high-service reservoirs 600 feet above the sea level. These reservoirs may be reckoned among the grandest works of modern times; they are entirely hewn out of the rock. The low-service one holds 240,000 cubic feet of water in five large tunnels, which are filled to a depth of 27 feet. This reservoir lies 150 feet below the surface of the ground, so that the water is always cool. From the Capodimonte res rvoirs the main service-pipes branch all over the city, forming a network, with close meshes supply is continuous, and there are no domestic cisterns. From this description it will be seen that the water is collected underground, in pure mountainous strata, at a high elevation. All the reservoirs in pure mountainous strata, at a high elevation. All the reservoirs are subterranean, and the water, therefore, is never exposed to the open air until it issues from the taps or fountains in Naples. Reservoirs and aqueducts are alike thickly lined with Grenoble cement, rendering pollution impossible. The length of the whole system of pipes that feed the city from the reservoirs of Capodimonte was, at the opening of the work, 62 miles. Numerous public fountains stand in all the twelve quarters of the city, and flow constantly. constantly.



THE ARCHITECTURAL LEAGUE OF NEW YORK

THE regular monthly meeting and dinner of the League will be held in the Club-rooms, on Wednesday, November 7, at

The Committee on Current Work announces that Mr. C. Howard Walker, of Boston, will address the League on "The Advisability of

Registration of Architects."

The Committee on Monthly Exhibitions announces that, through the courtesy of Mr. Richard M. Hunt, there will be an exhibition of $\frac{1}{4}$ " scale, $\frac{3}{4}$ " scale, and full-size drawings of the Fogg Art Museum at Cambridge, Mass., also $\frac{3}{4}$ " scale drawings of other buildings; these drawings will repeat on exhibition for one week from the data these drawings will remain on exhibition for one week from the date of the meeting.

The following gentlemen have been elected members of the League

The following gentlemen have been elected members of the League since the September announcement:

Resident. — Mr. Edward Palmer York, Mr. Burt Leslie Fenner, Mr. Evarts Tracy, Mr. Augustus D. Shepard, Jr., Mr. Isaac A. Josephi, Mr. Raleigh C. Gildersleeve.

Non-Resident. — Mr. John T. Windrim, Mr. Louis C. Hickman, Mr. Frank A. Hays, Mr. John H. Coxhead, Mr. Samuel Huckel, Jr. The following posteron as a coxhead, for prophensivity.

The following gentlemen are proposed for membership: Mr. William H. McCabe, Mr. Alex. S. Locke, Mr. Caryll Coleman, Mr. Herman Behlen, Mr. Teunis J. Vander Bent, Mr. Julius F.

Munckwitz, Mr. Arthur A. Hodges. Any member having any communication to make, relative to candidates for membership, is respectfully requested to forward it to the Executive Committee prior to the second Thursday of the month. All communications are privileged and confidential.

SPECIAL PRIZE COMPETITION.

The members of the Architectural League are especially invited to take part in the following programme scheme for the decoration of the Architectural League Rooms.

Prizes awarded from the Decorating and Furnishing Fund: First Prize, \$100; Second Prize, \$50.

The Competition is open only to members of the League.

CONDITIONS.

The screen and bookcases now in the rooms are not of necessity to be retained. Provision must be made for the library in bookcases to contain about 1,000 volumes.

to contain about 1,000 volumes.

The designs should be presented in elevation, rendered in color to a scale of three fourths inch to the foot, and should include the decoration of walls and ceiling and the arrangement of the bookcases. The floor-plan to be to a scale of one-fourth inch to the foot. The drawings may be on one or several sheets

No perspective drawings will be admitted.

may be on one or several sheets. No perspective drawings will be admitted.

The awards of First and Second Prizes, as above, will be made by vote of the League. As it is especially desirable to have the opinion of the League whether any of the designs submitted shall be carried out, a separate vote on this point will be taken. The object is to obtain a scheme of decoration consistent with the uses of the room, in the hope that it may ultimately be executed.

All drawings must be marked with a most or eigher only and a

All drawings must be marked with a motto or cipher only, and a sealed envelope similarly marked, containing the names of the authors, should be sent with the drawings, which are to be sent to the undersigned Committee on or before the second of December, 1894.

They will be placed on exhibition at the regular December meeting of the League, and remain on exhibition until the regular January meeting, at which time they will be voted on by the members present.

Blue-print plan and elevations of the room may be obtained from the Curator, Mr. U. J. Pratt, at the League rooms on payment of twenty-

The Committee on Competitions and Awards: Thomas Hastings, Will H. Low; G. L. Heins, Chairman.

Deliver drawings addressed to The Committee on Competitions

and Awards, Architectural League of New York, 215 West 57th Street.

CHARLES I. BERG, Secretary.



Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

CHRIST CHURCH, PORTSMOUTH, N. H. MR. H. M. CONGDON, AR-CHITECT, NEW YORK, N. Y.

[Gelatine Print issued with the International and Imperial Editions only.]

V TRINITY CHURCH, SAN FRANCISCO, CAL. MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL.

TRINITY CHURCH, just completed, stands on the northeast corner of Bush and Gough Streets, San Francisco, Cal. The edifice is built

of gray Colusa sandstone in rubble work. The cost of the church including the pews, gas-fixtures, etc. was \$126,500. The church is built in the early English Gothic style.

CHURCH OF SS. PETER AND PAUL, JAMESTOWN, N. Y. MR. F. JOSEPH UNTERSEE, ARCHITECT, BOSTON, MASS.

ST. ANTHONY'S CHURCH, ALLSTON, MASS. MR. F. JOSEPH UNIER" SEE, ARCHITECT, BOSTON, MASS.

TWO DESIGNS FOR CHURCHES PREPARED BY MR. W. L. WELTON, LYNN, MASS.

[Additional Illustrations in the International Edition.]

KENESETH ISRAEL SYNAGOGUE, BROAD ST., PHILADELPHIA, PA. MESSRS. L. C. HICKMAN & O. FROTSCHER, ARCHITECTS, PHILA-DELPHIA, PA.

[Gelatine Print.]

A PRIVATE HÔTEL, RUE HAMELIN, PARIS, FRANCE. M. L. GUINOT, ARCHITECT.

[Copper-plate Photogravure.]

INTERIOR OF PORTE COCHÈRE OF A PRIVATE HÔTEL, RUE HAMELIN, PARIS, FRANCE. M. L. GUINOT, ARCHITECT.

[Copper-plate Etching.]

NO. 180 QUEEN'S GATE, KENSINGTON, LONDON, ENG. MR. R. NORMAN SHAW, ARCHITECT.

NO. 179 QUEEN'S GATE, KENSINGTON, LONDON, ENG. MR. W. EMERSON, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE ESSENTIAL CONDITIONS OF SAFETY IN THEATRES.

TO THE EDITORS OF THE AMERICAN ARCHITECT: -

Dear Sirs, - In my recent articles on "Theatres," contributed to your columns, I stated that I had not been able to find on record a single case of a theatre being set on fire by lightning. I am greatly obliged to Ernest A. E. Woodrow, Esq., A. R. I. B. A., for calling my attention to the recent complete destruction of an English theatre by fire, caused by lightning. The Reading Observer, of September I, 1894, relates that lightning struck the top of the Royal County Theatre in Reading, England, near the ventilator over the gallery, and almost immediately the building stood in flames. The theatre was a complete wreck. Date of this fire: Saturday, August 25. Time of day when fire broke out: in the morning.

Respectfully yours, WM. PAUL GERHARD. your columns, I stated that I had not been able to find on record a

PHILADELPHIA, PA., October 13, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs,—In your issue of October 6, under the heading of "The Beaux-Arts Society's First Competition," you state that this competition is open to all students among the members of the Beaux-Arts Society, Columbia College, University of Pennsylvania, Harvard University, The Boston Institute of Technology, Cornell University, and to all members of the Sketch Club of New York, the Boston Architectural Sketch Club and the Philadelphia T-Square Club.

THE INTER-CLUB COMPETITION.

This, I believe, is correct, and the Beaux-Arts Society have rganized the competition as it now is; however, I should like to add that the T-Square Club of Philadelphia has for the past year been endeavoring to get up an Annual Inter-Club Competition, and appointed a committee to correspond with all the leading architectural clubs on this subject.

This committee, after months of correspondence, found that it would be impossible to organize an annual, or even a special competition of each club's regular work, owing to the diversified problems given out by the different clubs.

Finally, fearing that the whole scheme would fall through, the

Executive Committee of the T-Square Club decided that it would accept any agreement for a general club competition, which should be mutually satisfactory to the Sketch Club of New York, and the Boston Architectural Sketch Club, allowing them to pursue any mode of bringing about a national competition, regardless of any of our previous suggestions.

In pursuance of this resolve, I visited the presidents of the above-named organizations and informed them that the T-Square Club stood ready to adopt any programme they would prepare. The very interesting and scholarly problem prepared by the Beaux-Arts Society meets with our full approval, and is an encour-aging step towards the advancement of grammatical designing aging step towards the advancement of grammatical designing.
We trust that it will elicit much latent talent among all the mem-

bers of the competing organizations, and that it will prove the means of a closer relationship between all the architectural institutions of Very truly yours, the country. ALBERT KELSEY.

THE REPORT OF THE COMMITTEE ON EDUCATION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

SCRANTON, PA., October 27, 1894.

To the Editors of the American Architect:-

Dear Sirs, — Having read the above report with the greatest satisfaction and being now permanently enlisted in the work of architectural education, I beg to submit a few remarks on the subject. The tendency of this report is admirable, its recommendations are absolutely sound, nor is there anything impractical or utopian about them. They strike at the very root of the defects in architectural education that the strike at the very root of the defects in architectural education. about them. They strike at the very root of the defects in architectural education, the superficiality with which the philosophical foundation of the art is being taught. The minds of students are filled with a picturesque array of facts and data, which fail to have been properly explained or properly understood. The whole tendency of the education is not to make the students understand what architecture is and should be, as the art of building beautifully, resting on a basis of progressive historical development and technical evolution but tends on the contrary simply to teach out. nical evolution, but tends, on the contrary, simply to teach, out-wardly, the accomplished results and the means of doing what has been done before. To start, the education is not deep and serious, not analytical, but only practically useful in the every day sense of the term. The schools turn out good draughtsmen who can handle the existing material of architectural art with fair success, but very the existing material of architectural art with fair success, but very few inventive designers whose work shows a knowledge of the æsthetic and technical principles, on which alone the art can be advanced. We miss, as the Committee points out, a steady intelligent tendency with a well-defined direction; we miss, so to say, a communion of effort and aim. This is proved by the spectacle of current work; styles are taken up, in a very few years run to the ground, and dropped for some other fashion, without having left any true gain in their tracks. Commercial reasons cannot entirely account for this wavering and unrest; they exert their influence only because a steadfast and conscious purpose of artistic aim is absent. This can only be supplied by a more analytical and philosophical method of study. It is a totally mistaken notion that young men cannot understand the philosophy of art; I venture to assert that young men of artistic talents (and only such can be considered) can not only understand such teaching, but crave for just such instruction. And if out of one hundred students only five shall attain the aims and possibilities of such training, the other ninety-five will be able to follow them with intelligence; good work commenced by one or a few would be taken up by all and carried to a destination of solid achievement. Architecture, in its merits and defects, is generally said to be the mirror of the times and people to which it belongs, and, therefore, beyond the possibility of conscious direction; but I believe with the Committee, that we occupy in this respect a favored position and that we should resolutely lay the foundation of a great architectural style for this country by planning the instruc-tion in our schools on the soundest possible basis that can be evolved out of past disappointments and a free discussion of the subject.

JOSEPH A. STARK, Instructor in Architecture, Carr School of Mechanics and Industrial Sciences.

THE BATTLE WITH FIRE: A CORRECTION.

CINCINNATI, OHIO, October 20, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT :-

Dear Sirs, — You were kind enough to refer in your issue of August 25, to my recent address on the "Battle with Fire" before the American Association for the Advancement of Science at its

Brooklyn meeting.

The criticisms which you make upon certain positions taken by me in the address, according to what you supposed to be a correct report, are so thoroughly in harmony with my own opinions, that it may be desirable to call your attention to the exact text.

1. The address emphasizes the importance of following "the good old system that the Romans taught" and calls attention to the methods devised by chemists for resisting conflagration, as a help to mitigating the evils of the terrible wasteful bondage to which Americans are subject, as long as the extended use of wood as a structural material continues. structural material continues.

2. The use of aluminium is recommended, only for replacing in-

ternal and external wooden decoration, not for replacing iron and steel as structural metals.

3. The use of carbon dioxid and a system of piping, by means of which the liquid oxid is capable of being distributed either automatically or under the control of a watchman, is recommended especially for warehouses and the storehouses of factories where life would not be endangered, but loss by water on the breaking out of a fire could be avoided.

I regret that you did not have the correct text before you, while criticizing the paper, as we are evidently in perfect unison on the above questions. Faithfully yours,

T. H. NORTON.

[We regret, equally with Professor Norton, that we could not have had the correct text of his address before us; but, of course, we are obliged to depend on the daily journals for early notices of such papers, and cannot always correct their reports. As Professor Norton says, we should certainly have agreed cordially with his real suggestions, and we hope that he will be able to devote more attention to this extremely important subject.

— EDS. AMERICAN ARCHITECT.]

THE DRY-CLOSET SYSTEMS.

BOSTON, MASS., October 18, 1894.

To the Editors of the American Architect:-

Dear Sirs, - This is not intended for publication; not but I am willing, but the subject is of such importance that I would like an opinion from the ablest experts on sanitation in New England or Massachusetts.

The Smead system of closets in school-houses is a menace to the health of children and teachers. The system is to drop the dung and urine in vaults in the basement of school-houses where it is supposed to dry and become powdered so it may burn or be taken out. When there is a great heat in the stack-heater, the air may circulate as designed, but in vacations or shortage of fuel the air comes back into the building and is a source of danger, disease and death. I wish the State of Massachusetts would have the systems examined

by experts in sanitation.

Some information may be obtained of the inspectors of buildings at Worcester, Lowell and Providence. Yours respectfully,

[We have several times expressed the opinion that the practice of allowing the air-ducts in school-houses to open directly into the vaults, depending upon the rapidity of the outward flow of air to prevent the diffusion of foul vapors into the school-rooms, was objectionable. As our correspondent says, in vacation time or in warm, moist weather, when air-currents move slowly, while diffusion is extremely rapid, it seems to us that there is too much danger of the return and lodgment of infectious particles in the school-rooms. It is, however, only fair to say that this arrangement of the school-rooms. It is, however, only fair to say that this arrangement of the school-rooms, and with interest in the school closets is by no means essential to the Smead system of heating and ventilation, of which, apart from this feature, we have a high opinion. In fact, a good modern school-house, with proper water-closets, and with its rooms heated and ventilated, entirely independent of the water-closets, by either the Smead or the Fuller-Warren system, is a very good place for children to stay in, and the country owes much to these engineers, who have studied school-house ventilation so persistently and successfully.—Eds.



BOSTON, MASS. — Exhibition of the Works of Adolf Menzel; also, Drawings by John Trumbull: at the Museum of Fine Arts, in October and November.

CHICAGO, ILL. - Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.

NEW YORK, N. Y.—Loan Exhibition of Portraits of Women: at the National Academy of Design, November 1 to 24.

Second Annual Summer Exhibition of American Paintings: at the

Second Annual Summer Exhibition of American Paintings: at the Fifth Avenue Art Galleries.

Twenty-sixth Annual Spring Exhibition: at the Metropolitan Museum of Art, opened May 8.

Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

PHILADELPHIA, PA. — Sixth Annual Exhibition of the Art Club of Phila-delphia: opens November 19, closes December 6.

PROVIDENCE, R. I. — Paintings by Providence Artists: at the Art Club, closes November 10.



EFFECT OF REVOLUTION ON FRENCH REAL ESTATE.—One of the most enticing features of life in France is the vast number of châteaux dotted over the country. The soil of France is divided among eight millions of proprietors, and whenever a Frenchman has made a little money he proceeds to buy a small estate with a pretty country-house on it, which he styles a "castle." If he be a man of artistic tastes he has a château specially built for him with the latest architectural improvements, and expends much money on the furnishing. There is not a retired tradesman, painter, journalist, or actor of any standing in



France, but owns his château, where he resides only during the summer months; and at his death this mansion almost invariably goes to the hammer. Owing to the French laws of succession, which oblige a man to divide his property equally amongst his children, it is very seldom that a family lives throughout two generations in the same château; so that pleasant country-houses are continually in the market, and an Englishman with a little capital can make astonishing bargains if he selects the right time for buying or signing a lease. The seasons propitious for such operations come but too frequently, thanks to the political instability of the country. The effect of every revolution in France is to cast hundreds and hundreds of châteaux upon the market, and most of them can be had for a song, furniture included. There is absolutely no ratio between the price of French house-property in times of peace and at periods of turmoil. When a revolution breaks out, owners of châteaux are smitten with a deadly panic; they imagine that the end of all things has come; that Socialism and Communism are going to confiscate the soil and part it among the rabble; their only thought then is how to realize cash that they may bolt to some less accursed land. During the troubles of 1848, an Englishman came to France and heard of a château at Neuilly which was for sale. It was a lovely house, beautifully furnished, and stood in a park of eighteen acres. The owner, a Peer of France, appalled by seeing Louis Philippe's palace at Neuilly pillaged and destroyed by the mob, accepted 5,000l. for the château, furniture, park and all, and thought himself lucky to get that money. Four years later, in 1852, when the Second Empire was established by the coup d'etat, and property became secure again, the Englishman sold his property for 1,200,000 francs (48,000l.). Eight years then elapsed; the war with Germany broke out: the Empire was overthrown, Paris was besieged, the Commune supervened; the three-per-cent rentes (now quoted at 81) had sunk to

Generating Artificial Natural Gas.—What is known as the Heckert-Rowland plan for generating natural gas in the bowels of the earth is about to be given a practical demonstration in Findlay, O. The necessary pumps and engines are now being erected on the site of the old Wetherald rolling-mills, in the northeastern part of the city. This is in the vicinity of several abandoned gas-wells which will be utilized for conducting the experiments. The theory, which was evolved by William Heckert, a well-known mechanical engineer, at present a member of the Findlay City Council, will work a revolution in the natural-gas region if it proves practical. Heckert proposes, by means of powerful pumps, to force air down into the gas-bearing rocks, which it will permeate, and thereby become infused with the active properties of the gas itself. It is contended that, as now burned for fuel, the natural gas requires an admixture of nine parts of air to one part of gas, and that this mixing can as well be done in the earth as in the stove or in the furnace where it is burned. The great trouble in the gas region is not so much the decrease in the volume of gas as the decrease in the pressure. This has fallen off in a large portion of the Ohio field, from four hundred pounds, at which it started, to forty to eighty pounds, and this is found to be insufficient to convey the gas from the wells through the system of pipes to the point of consumption. The friction takes up all the initial pressure. By Heckert's process this lost pressure will be re-established. His air-pumps, constantly at work, will force enough air down one hole to create a pressure sufficient to force the remaining gas, mixed with the air, out of several other holes, and give it a strong initial pressure in the pipes. The gas thus formed or charged with air will be ready for burning with little additional mixture of air at the point of combustion. It is also claimed by Heckert that air thus pumped down into the rock and passing over and through the pools of oil which a

SMALLER SIZES FOR YELLOW PINE. — O. S. Whitmore, in Dixie, advocates the use of smaller scantling. He suggests 2"x 3" instead of 2"x 4". That suggestion might be made applicable to yellow pine, which is tougher and stronger than white or Norway pine, not only in respect to 2"x 4", but to larger sizes as well. The Lumberman has suggested that all yellow pine could be cut to smaller sizes than soft pine, because thus cut it would perform an equal service with larger-sized soft pine. This would be especially beneficial to producers who ship long distances northward, because the lighter weight thus secured on a given nominal amount of lumber would save freight charges, but it likewise would be a basis for cutting prices. Thin or narrow lumber is not worth as much as thick, for the reason that there are not as many superficial feet in the small-sized stuff as in the larger. But this suggests another thing: There could be two sets of sizes at different prices, which would add an element of trade in suiting the customer. But as a general proposition, small-sized framing dimension makes a light, cheap-looking structure.

Trim cannot be applied to light studding without producing this shanty-like appearance. From an architectural and æsthetic point-of-view, studding and joists would better be larger sized than smaller. A 2"x6" or a 2"x8", as outside studding, makes a solider and more substantial-looking building than 2"x4". Interior studding, of course, need not be so wide, because the saving of space is requisite. Yet a 2"x6" for partitions would render even an interior more substantial in appearance, and would show off casings and trim to much better advantage than 2"x4". In this climate of hurricanes, tornadoes, cloud-bursts and winter blizzards, we need to give increased strength and solidity to buildings. It would afford a greater sense of security, whether that result were thereby, in fact, reached, or not, by the use of heavier material. — Northwestern Lumberman.

The Burns caused by Intense Cold. — M. Pictet of Lausanne, in his experiments on liquefying gases, has suffered from cold-burns, and recently gave an account of these to the Société Helvétique des Sciences Naturelles at Lausanne. In one kind of burn, the skin is reddened and turns blue next day, the area of the spot increasing, and the cure not completing for five or six weeks. A painful itching attends this class of burn. In a more serious kind of burn, due to greater cold or longer contact with the cold body, the skin is detached, and the parts reached by the cold behave like foreign substances. Suppuration sets in, the sore is malignant, and a scar is produced. M. Pictet accidentally scorched his hand with fire at the same time that he burned it with liquid air, and while the ordinary burn healed in ten or twelve days, the other was bad for six months. To try the effect of losing heat by simple radiation in cold air, M. Pictet plunged his bare arm into refrigerated air at a temperature of 105° Centigrade below zero, without touching the wall of the vessel. All over his skin he felt a disagreeable and indescribable sensation growing more and more painful, and having its seat in the central bone or the periosteum. After three or four minutes the skin was blue, and the pain became more intense and deeper-seated. On withdrawing his arm at the end of ten minutes, a strong reaction was experienced, accompanied by superficial inflammation of the skin. This reaction is an intensified form of that experienced after handling snow for some time. — The London Globe.

Temple Newsam. — Temple Newsam, one of the famous historical mansions of England, stands in an extensive park adorned with stately and ancient timber, at a distance of about five miles from Leeds. The house is a large, brick structure, composed of a centre and two wings, and is a fine specimen of Jacobean architecture, and is curious from its roof being surrounded with a battlement composed of capital letters in stonework, forming the following inscription: "All glory and praise to God, the Father, the Son, and Holy Ghost on high; peace on earth, good will toward men; honor and true allegiance to our gracious king, loving affections among his subjects, health and plenty within the house." The paintings at Temple Newsam are numerous and very fine, occupying a gallery one hundred and nineteen feet long. The collection of family portraits is especially interesting, ranging as it does from Sir Arthur Ingram to the present time, and forming a good study of costume for over two hundred years. Sir Arthur Ingram, who built this magnificent structure on the estate that had belonged to the Lacies in the middle of the twelfth century, was the son of a wealthy citizen of London and founder of the Irvine peerage, and he purchased the place from the Duke of Richmond. Its history and fortunes have been preserved to this day intact, and the present possessor is Hon. Mrs. Meynall-Ingram, whose husband directly inherited it. — Boston Herald.

Meynall-Ingram, whose husband directly inherited it. — Boston Heraid.

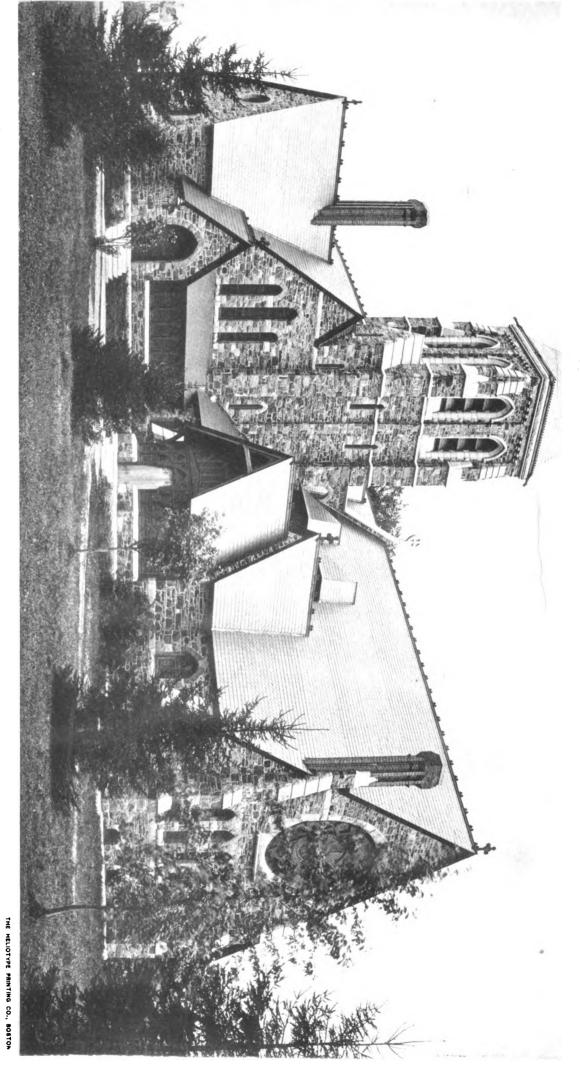
A Priory for Both Sexes.—Watton Priory, on the edge of Holderness, in Yorkshire, is now being excavated to solve a curious problem in church architecture. The priory was the largest establishment of the Gilbertine order, the only religious order founded by an Englishman, St. Gilbert. It never spread to the Continent, and in 1148 was allowed by the pope to keep together Cistercian nuns and Augustine canons. At the Reformation, only three monasteries containing men and women existed, without doubt, of which Watton was one. The problem is how the two sexes were kept apart. The position of the church, 208 feet long by 51 feet wide, has been found, with the longitudinal partition wall dividing the sexes. Though the remains are not high enough to show the arching, enough fragments have been found to give an idea of what it must have been. To the north of the church a large cloister, 100 feet square, has been found, undoubtedly belonging to the nuns, who were double in number to the men, with a large chapter-house on its east side, north of which was a dormitory 111 feet long. On the south side of the cloister was the refectory. The canons' house has not yet been found, but is being sought for to the west of the church. — Boston Transcript.

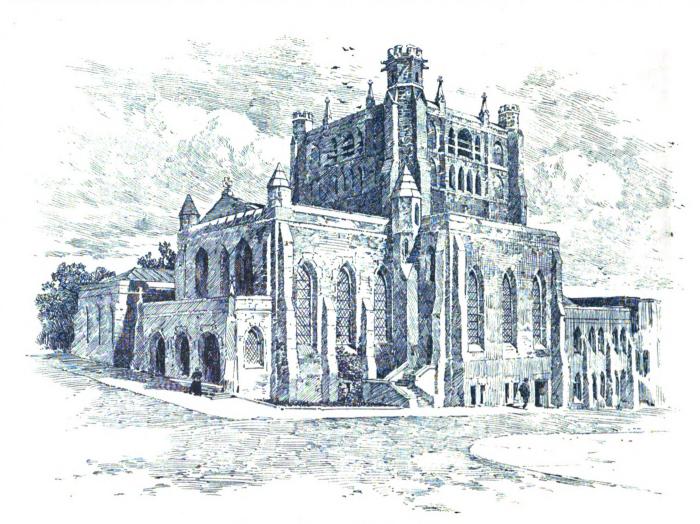
St. Paul's formerly a fashionable Promenade.—The visitor to our English cathedrals and churches is accustomed to the facile generalization which attributes every act of irreverent and destructive vandalism to persons vaguely, by papers and others, designated Puritans, with preference to those of the Commonwealth. This is largely a case of "give a dog a bad name and hang him," for it is well known that on the Puritans' shoulders are laid many sins besides their own. It is evident from Dr. Sparrow Simpson's account of the state of St. Paul's Cathedral during the reign of Mary and her consort Philip that even when there was the very contrary to Protestant dominance, exceedingly scanty respect was paid to sacred edifices. The nave of St. Paul's was used as the fashionable promenade and gossiping place of the citizens, and in the reign named it was a matter of common practice not only to turn the church into a sort of passage or street, through which barrels of beer, baskets of provisions or bales of cloth were carried, but even horses, mules, and beasts were led through it. With such habits under a Catholic queen, it is scarcely surprising that Cromwell's troopers may, under the stress of urgent necessity, have on occasions, more or less mythical, stabled their horses in a parish church.

— Illustrated Carpenter and Builder.





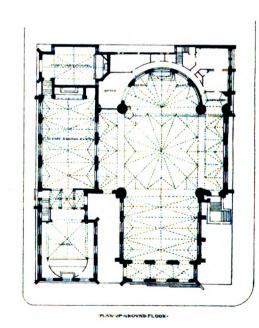




GENERAL VIEW OF TRINITY CHURCH



INTERIOR OF CHAPEL AND SUNDAY SCHOOL ROOM



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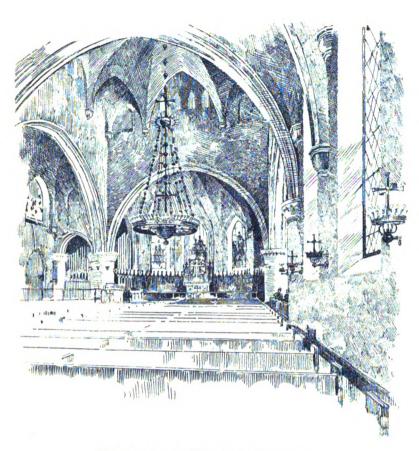


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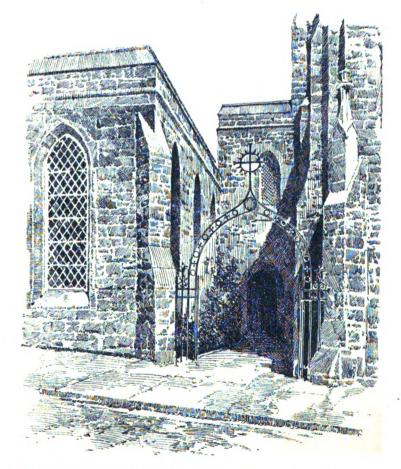


MORTUARY CHAPEL TRINITY CHURCH

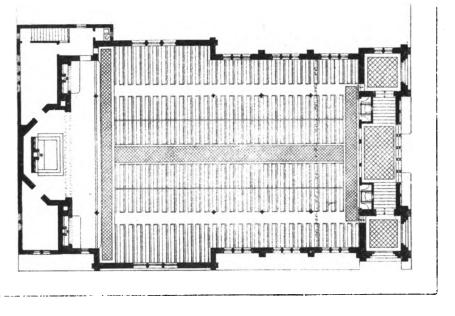
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INTERIOR OF TRINITY CHURCH

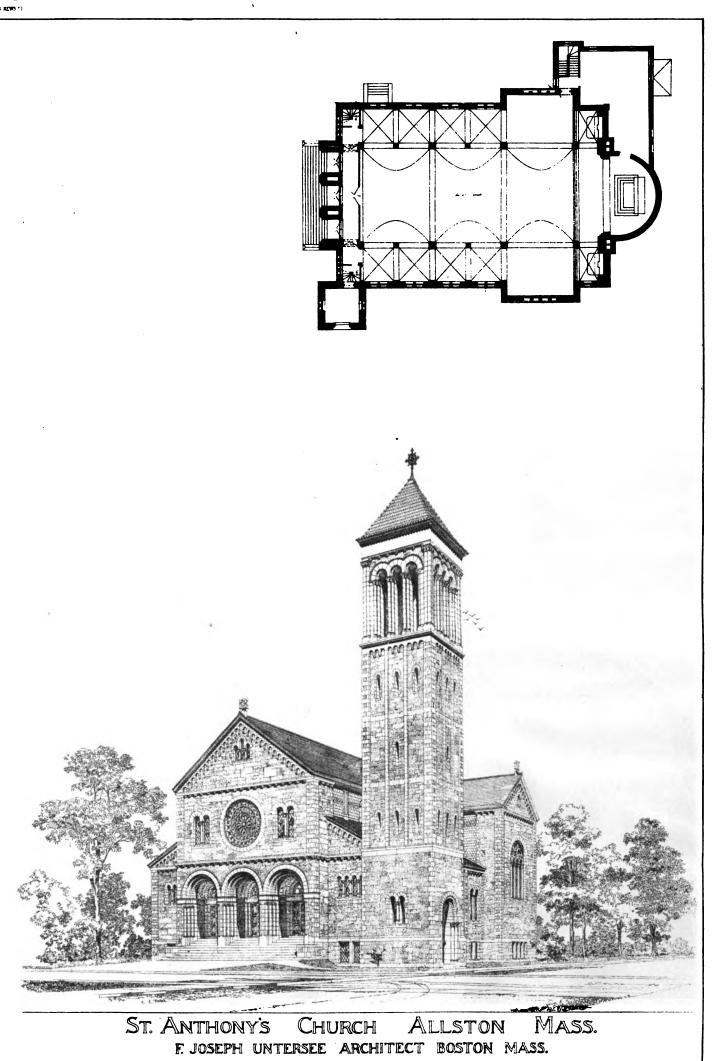


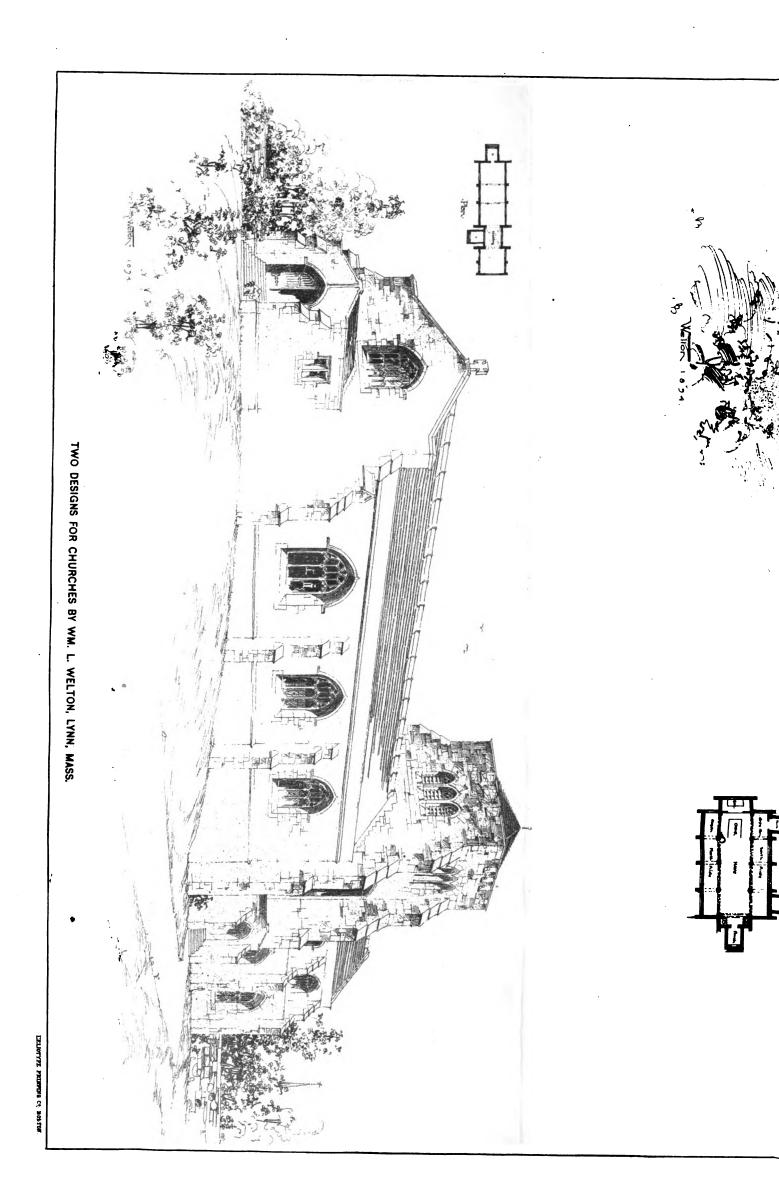
Passageway Between Church and Chapel

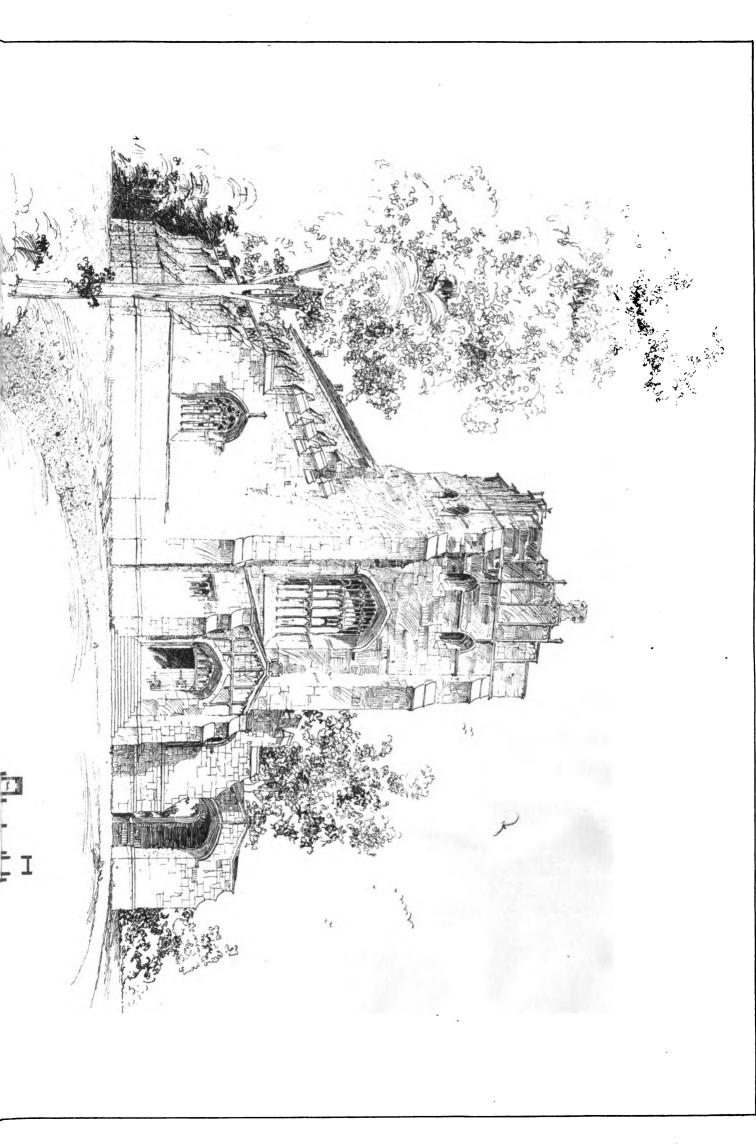




Saints Peter and Pauls' Church Jamestown Alem Mork K. Ioseph Antersee Architect Boston







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Entered at the Post-Office at Boston as second-class matter. NOVEMBER 10, 1894.



Application of Centrifugal Action to Casting Iron. — Decision of a Custom's Suit over imported Iron Beams for the Boston Court-house. — The Movement to create a "Greater Boston." — Suit brought against the City of New York in the Matter of the City-hall Competition. — In New York, Granite "Pavers" can be laid only if cut in the City. — Action looking to the Preservation of the Palisades. — The Microphone to be used in the London Law Courts. — A New Theory of Steam Propulsion for Vassals Steam Propulsion for Vessels.

THEATRES. — VII.: LAIBACH NOTES ON FURNITURE DRAUGHTING. LETTER FROM CHICAGO. 56 59 61 IN ITALY..
ILLUSTRATIONS

USTRATIONS: —
Staircase Hall in the House of Edgar Harding, Esq., Wood's High-school Building — House at

Staircase Hall in the House of Edgar Harding, Esq., Wood's Hole, Mass. — Fitchburg High-school Building. — House at Yonkers, N. Y. — Burlingame Country-club Stable, Burlingame, Cal. — Colonial Work at Newport, R. I.: Two Doorways. — Stable at Wyckoff, N. J. — Design for a Stable. — High-school Building, Medford, Mass.

**Additional*: Bethlehem Presbyterian Church, Broad St., Philadelphia, Pa. — A Shop-front Marquise, Paris, France. — The Fontana del Corpo di Guardia, Ragusa, Italy. — Houses and Details of the Same at Osnabrück, Prussia. — Apartment-house, Stockholm, Sweden. — New Cathedral Highschool for Boys, Esplanade, Bombay, India. — New Conservative Club-house, Glasgow, Scotland. — School-board Offices, Salford, Eng. — Victoria Institute, Worcester, Eng.: Entrance to Library Block. — The Library Block of the Same. — The Schools' Block of the Same. Same. — The Communications:

The Dry-closet Systems. - The Report of the Committee on Education. Notes and Clippings.

LA REVUE INDUSTRIELLE mentions a method of casting iron which, we hope, may be of interest to some of our readers. It is well known that iron castings are very liable to "blowholes," "cinders" and so on, which occur in the middle of the mass, and destroy its strength, or, at least, its appearance. These defects are caused by particles of scoria, oxide, or other impurities, which flow out of the melting furnace into the ladle, or are formed by the contact of the hot metal with the air, or with the sand of the mould. In fact, if the molten iron is watched, as it is drawn from the furnace, the surface is soon seen to cover itself with dull lumps of scoria and impurity, which rise to the surface. It is usual to fill the moulds more than full, so that the lighter substances may float to the top, and collect in the portion to be subsequently cut off; but this does not entirely remove them. M. Van Riet, to give the impurities time to separate from the melted iron before it runs into the mould, sets on top of the flask a sort of little bath-tub, lined with some refractory substance, and presenting three cylindrical hollows, of different sizes, communicating with each other by tangential channels. The iron is poured from the ladle into the larger hollow, where it whirls around for a time, and then escapes into the second basin, where it revolves in the opposite direction. From this it reaches the third compartment, which has a hole in the bottom, and, as this hole is set over the pouring-hole in the flask, the iron then runs out into the mould. When the metal is poured into the large end of the tub, it is seen to whirl around until the surface is covered with the larger particles of impurity, which collect near the middle, the centrifugal force developed by the whirling serving to separate the purer and more liquid iron from the light and spongy scoriæ, very much as cream is separated from milk by a centrifugal churn, or molasses from sugar in the centrifugal tanks of a refinery. By the tangential channel, the purer iron passes into the second division, where the same process is repeated, the scoriæ, which are now in fine particles, collecting in the middle, while the liquid metal keeps to the The third canal, also tangential, leads this twicepurified iron to the third compartment, from which it runs into the mould, a few particles of dross floating up from the mould, and collecting at the top. On cooling, the first division

of the "bath-tub," or "poche intermédiare," as its inventor calls it, is found to contain the large lumps of cinder; while the second compartment contains a spongy mass of impurity, in the shape of an inverted cone, the base of which occupies the whole area of the compartment, the pure metal having escaped around the sides below. In the third compartment nothing appears but a little ring of particles, the last to rise to the surface out of the mould. The castings made from iron thus purified are extremely sound and solid, and there is no loss of metal, all the pure and liquid iron escaping into the mould. The "bath-tub" is easily cleared out, and is relined for a second operation by plastering with fire-clay mortar.

RCHITECTS will remember that, four or five years ago, an ingenious contractor imported some iron beams for use in the new Boston Court-house. At that time there was an enormous duty on structural members of iron, and a much smaller one on iron structures. The contractor, therefore, had the beams framed together somehow, and entered them at the Custom-house as an "iron structure." The collector refused to classify them under this head, and demanded duty on them as separate iron beams. The duty was paid, under protest, and the beams taken to the building, and suit was brought to recover back the excess of duties paid. The claim was resisted, on account of informality in the protest; but it has just been decided that the protest and claim were in proper form, and that the contractor, so far as these were concerned, was entitled to recover.

ESIDES the question of reviving its commerce by improving its dock accommodation, Boston has begun to agitate the matter of annexing the adjacent towns; or, at least, of combining them in a sort of "Metropolitan system"; and several hearings have been held in the suburban towns, to sound the feeling of the inhabitants. Naturally, the elements opposed to the abolition of the little independent municipal organizations have been most prominent in these preliminary hearings; but a good deal of sober opinion has been expressed in favor of a more comprehensive administration of the affairs of what is really a single great city, just as London, or Paris, or Chicago, are single cities, although some trace still exists of their ancient parish or township divisions; and the political consolidation of the communities which have long been united by all material interests will probably come about before long.

HERE is in the community represented by Boston, perhaps more than almost anywhere else in the world, unless in Italy, an intensity of local feeling which it will take some time to overcome. Cambridge, for example, which is really just as much a part of Boston as Lambeth is of London, is justly proud of its position in the world as the seat of the oldest and greatest American university, and the home of a large proportion of the men who have honored American science and literature; and it will not willingly give up its autonomy; while Brookline, which is not famous for anything in particular, unless it may be for the wealth of its inhabitants, has clung fanatically to its ancient town organization, and will with reluctance sacrifice its beloved town-meetings, and its Board of Selectmen, to a more modern form of government. Nevertheless, in the interest of the people of Boston, perhaps more than in that of the inhabitants of the surrounding towns, it is every day becoming more necessary that some control should be established over the whole metropolitan district, which now suffers, and will hereafter suffer much more, from the jealousy and indifference, to call it by no worse name, with which each little municipality treats the others. For example, Boston has had, in years gone by, an economical, and in some respects commendable system of garbanisposal, which consisted in collecting the kitchen-refuse separately, and selling it to the farmers of the surrounding country, who sent carts regularly for it. It was probably fed to pigs, but it was carefully collected, and the pigs might have had a much worse diet. The revenue to the city from this source had become quite considerable, when the suburban towns took it into their heads to interfere, and ordinances were passed in several of them, forbidding the transportation of any swill through the streets, except that produced within the limits of the village. This, of course, cut off the farmers from outside, who could only get at

the garbage by going through the streets of the suburban towns; and Boston, deprived of this outlet, is now experimenting with means for destroying its garbage at home.

T must not, however, be supposed that the larger town has no means of revenging itself on its little neighbors. cently, Brookline and Newton have been seized with what may be called the boulevard fever. Newton is, at present, building a vast street, a hundred and fifty feet wide, or so, and several miles long, which is to serve it as a main "artery of communication" with Boston. At the Boston end, this portentous thoroughfare collapses into a steep and narrow little road, called South Street, and many have been the representations made by the Newton authorities to their brethren of Boston about the desirability of widening South Street to dimensions commensurate with those of their colossal "boule-To these applications the Boston magnates listen gravely, hold a hearing or two, and then drop the subject. They are in no hurry to oblige Newton, nor have they any reason to be; and the consequence is that an improvement which, whatever its value, will be a very costly one, is carried out at an immense disadvantage; while, if one intelligent Board could control such undertakings for the whole district, they would be far more valuable to all concerned.

MESSRS. GEORGE ASHDOWN AUDSLEY and William J. Audsley, architects, have brought suit in the United States Circuit Court, against the City of New York, claiming one hundred and twenty thousand dollars for "services in designing, furnishing and delivering plans for a contemplated new municipal building." This is the first suit brought by architects in consequence of the abandonment of the scheme, for which competitive designs were invited some eighteen months ago; but it is said that other similar ones will probably be brought.

MODE of feathering one's own nest at the expense of that of other people, which is much favored by walking-delegates, consists in having laws passed by subservient Legislatures, under which public work must be executed, of course at a liberal cost, exclusively by workmen belonging to a certain favored class. In New York, a law of this kind has been enacted, by which it is provided that all stones used in State or municipal work must be dressed and worked on the ground; or, at least, within the boundaries of the municipality. A contractor, named Pollock, was recently employed to pave Pearl Street, from Whitehall Street to Hanover Square, with trap or granite blocks. Every one knows that pavingblocks are made at the quarries from refuse pieces, which are split up into blocks of suitable size and shape by blows of a large hammer, which the half-grown sons of the quarrymen learn to handle very dexterously. Pollock ordered his pavingblocks, as usual, from the quarry, and began laying them. Before he had gone far, his attention was called, by the Commissioner of Public Works, to the statute in question; and, two months later, he was notified that his contract was rescinded, and was ordered to take up and remove the blocks already laid, on the ground that they had not been "worked and dressed" within the city limits. As a split block of granite is neither worked nor dressed, within the meaning which stone-cutters apply to these words, Pollock claimed that the statute did not apply to the case, and asked for an injunction to prevent the Commissioner of Public Works from interfering with his completion of his contract. His application for an injunction has now been denied, so that, in New York law, a split stone must be considered as being "worked and dressed," and, for the future, the tax-payers must have their paving-blocks brought to the city in shapeless lumps, or boulders, and trimmed into shape by local talent, whatever may be the cost of the process.

N informal canvass of the present New Jersey Legislature shows that the members are nearly unanimous in favor of taking action for preventing further defacement of the Palisades. The first step will probably be to appoint a Commission, with instructions to present a plan by which the picturesque beauty of the cliffs may be preserved, with due regard to the rights of property-owners; and action on the plan presented will follow later. It may, therefore, be hoped that the conversion of this beautiful wall of rock into paving-stones will soon be terminated. Although the Palisades are

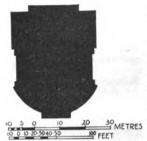
in New Jersey, it is really the people of New York who have the greatest interest in their preservation. To our mind, there is nothing more charming about the city than the view, which presents itself at every cross-street above Twenty-third Street, of the rocky escarpment, pink in the morning sunlight, or in deep shadow in the afternoon, which shuts out the western horizon. From the Riverside Drive the view is at its best, but at any point between this and the dividing ridge of the island, the rugged and inaccessible ledge, just far enough away for a romantic veil of dust and smoke, forms a striking contrast to the straight, monotonous streets through which it is seen, and gives to New York an air of being only a step from wild nature, such as few other large cities possess.

PERMISSION has just been given for establishing, in the London Courts of Justice, a service, the value of which can be appreciated by all who have anything to do with courts. In each court-room, near the judge's table, is to be placed a group of three large microphone transmitters, ready to receive everything that may be said by the judges, clerks and lawyers. The transmitters connect with a multiple telephone circuit, by which the words spoken in the court-room may be reproduced in a hundred or more telephone instruments, which are to be set up in the offices of such lawyers as may subscribe for them. By means of these telephones, the subscribers can listen to the morning reading of the list of cases for the day; hear what cases are settled or postponed, and form an accurate idea of the hour at which the cases under their charge will be called; thus saving an immense amount of time. which is now uselessly spent, by litigants, counsel and witnesses, in waiting, often for several days, around the courtroom, until their case is called. It is surprising that such a service should not have been first invented in busy and ingenious America; but, whoever invented it, there is no doubt that it will be quickly introduced here.

BAZIN, a French engineer of distinction, has proposed a new system of ship-building, which promises valuable results. Reasoning à priori, he reflected that, if a small boat were fitted with side wheels, like the so-called "water velocipedes," no great advantage would be gained, as the circumference of the wheels would be small in proportion to the power applied at the axle, and the circumferential speed would, therefore, be moderate; but if large wheels were used, the circumferential speed would be so much increased that, if power enough were applied, the vessel would be driven through the water at a more rapid rate than could be secured by any movement of mere sliding through the water. Keeping these principles in mind, M. Bazin constructed a small model, resembling a raft, on each side of which were fitted four hollow wheels which served at once for floating the structure, and for driving it through the water. Power was applied to the wheels, by some means which Le Génie Civil does not describe, and it was found that the little craft advanced through the water with a rapidity equal to sixty per cent of the circumferential movement of the wheels; or, in other words, that it ran over the water as a locomotive would on land, losing, as "slip," only forty per cent of the wheel movement. Applying these proportions to a vessel of five thousand tons, it would be easy to obtain a speed of thirty-two knots, or about thirty-six miles an hour. For steering his craft, M. Bazin employs a very original device. Instead of a rudder, the craft carries, near the stern, a hollow cylinder, the lower end of which is immersed in the water. The cylinder can be turned by the helmsman in any direction, and is so arranged that a stream of water can be forced horizontally from an opening at the bottom of it. When it is desired to turn the vessel in any direction, the cylinder-rudder is so set that the reaction of the stream of water issuing from it throws the stern in the opposite direction. In a ship of ordinary size, perhaps one-tenth of the power of the engines would be reserved for the steeringcylinder, which, by the force of the jet, accelerates, as well as directs, the movement of the craft, while the ordinary rudder acts as a constant drag. A steamer eighty feet long, and with wheels twenty-five feet in diameter, is soon to be built on this principle, and tried in the English Channel. M. Bazin thinks that, with further study of the ways of increasing the efficiency of the wheels, and preventing slip, the forward movement may be brought up to seventy per cent of the circumferential motion of the wheels. If so, a speed of nearly fifty miles an hour could probably be reached.

THEATRES.1 - VII.

LAIBACH THEATRE, AUSTRIA.



HE Laibach Theatre is an example of one of the smaller Conti-nental theatres upon an isolated

The exterior of this building, following the true tenets of good archi-tecture, indicates the arrangements and planning of the interior, and the authors of the work, Messrs. J. V. Hrásky and Ant. J. Hruby, are to be congratulated upon the dignified and truthful treatment they have given

taking this for anything but a play-house; every line of the exterior tells this tale. Glancing, then, at the elevation, the entrance vestibule, with saloon over, is marked by three-quarter columns and pediment terminating with an emblematic group of figures. A carriage sweep leads to three pairs of doors which are the main entrance doors to the theatre; an awning over the central door affords protection in wet weather to those alighting from carriages.

The curved front of the theatre follows the lines of the internal corridors running around the seating of the auditorium. Ornamental tablets, on which to display play-bills, fill the lower panels of the rounded corners, while a niche filled with statuary is placed above. Where the circular front joins the straight lines of the side elevations, the architectural treatment of the main entrance is reproduced in emphasizing the side entrances to the theatre. The roof over

in emphasizing the side entrances to the theatre. The roof over the auditorium stands out, in lieu of the usual ugly hipped roof of a theatre, as a feature in the design. The circular form of the ceiling below is reproduced, and a series of round bull's-eye windows show that outlets are provided for the foul and heated air which must collect below the auditorium ceiling. The large central extract ventilator is made an ornament as well as a useful addition to the roof treatment.

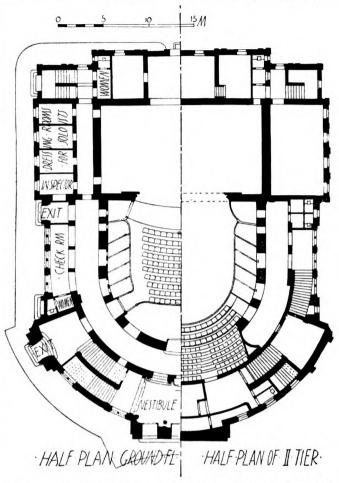
Towering up above the portion of the builling set apart for the spectators, stands the roof of the stage supported upon walls and a ediment which indicate strength and separation from the auditorium. The extra height given to the stage shows that due regard has been given to the necessity of having sufficient room above the stage for the manipulation and movement of the scenery without rolling or

the manipulation and movement of the scenery without rolling or folding it, while the stage smoke-extractor in the roof is not omitted as a part of the architectural whole.

The dressing-room blocks at the side of the stage can be recognized, by the manner in which they are designed, from the outside as dressing-rooms. No one looking at the windows which light these rooms would suppose they lighted a scene-dock or workshop; they are arranged ostensibly to light a suite of rooms near the stage which must, therefore, be dressing-rooms.

From the outside of the theatre we learn all this of the inside

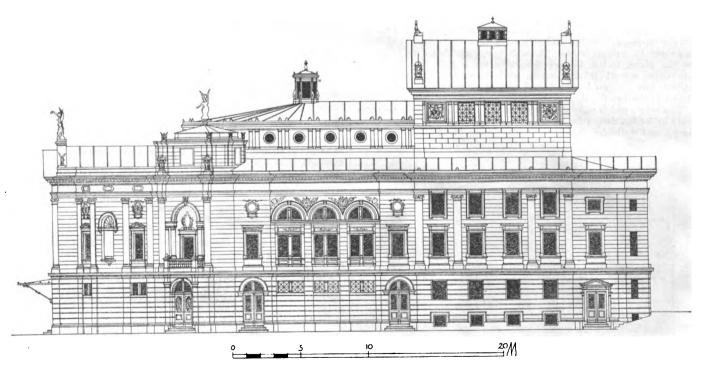
corridors, auditorium, stage and dressing-rooms can each and all be distinctly recognized as we glance at the building: and, yet, in spite of this distinction of parts, the building is designed as one whole, and



not as several parts tacked on to one another, as is too frequently the case.

The style and architectural details of the design are, and must ever be, to a great extent, matters of taste, yet I may venture to say all will agree that in this case the taste displayed is good taste.

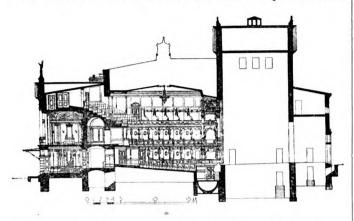
Passing now into the interior of the building by one of the three



arrangement and planning, and being able to learn so much, we are bound to confess that the true spirit of architecture as an art to appropriately clothe a building with a becoming and beautiful cloak has been followed by the authors of this theatre. Entrances,

central entrance doors, the vestibule is entered. In the centre, immediately opposite the central doorway, is the box or ticket office, with doorways to the right and left leading to the wide corridor (2.65m. wide) which surrounds the seating on the ground-floor. On each side of the vestibule are staircases leading to the grand tier on the first floor. on the first floor.

The seating of the ground-floor consists of a number of stalls in the area or parquet, with private boxes on either side and a space for pit at the back. Through the side vestibules, noticed while considering the exterior of the building, are extra exits from the ground-level, in addition to which there are also exits into the open air at the



ends of the corridors next to the proscenium-wall. There are, therefore, four extra exits in addition to the entrance to this part of the house.

The two exits which pass through the side vestibule are, however, not exclusively for the use of the occupants of the ground floor, as these vestibules form the entrances to the gallery above.

The planning of this theatre is in every detail symmetrical whatever is placed on one side is also provided on the other. The corridors are separated from the auditorium on the one side, and the approaches on the other, by solid walls, affording strength and protection to the building, and they are of sufficient width on each

tier to contain the whole number seated on such level.

On either side of the corridors are ample cloak-room spaces, so often deficient in English theatres, but on the other hand, the lavatory arrangements are as meagre as usually found in Continental play-houses. The steps shown outside the water-closet windows on the plan, which lead up to a blank wall, appear to be sadly sad errors in so truthful a design, and would scarcely have been

errors in so truthful a design, and would scarcely have been expected.

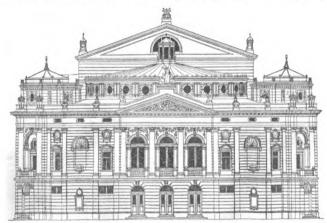
The first floor is approached by staircases two metres wide on either side of the central vestibule. These staircases are, however, of excessive length, having as many as twenty-two steps in a flight. They land in a lobby over the side-entrance vestibules, from which, also, staircases lead on either side to the private boxes on the gallery level. The whole of the second tier consists of private boxes, while the gallery is divided into two classes of seats, which in England we should call amphitheatre and gallery.

There is a foyer over the central vestibule, with small external balconies, and similar balconies open out of the lobbies at the top of

balconies, and similar balconies open out of the lobbies at the top of the staircases at the first-floor level.

The seating capacity of the house is small compared with the ground covered. In the stalls there appear to be only 135 fixed seats and 12 private boxes. A small space, not shown to be seated on the plans, is left behind the stalls for a pit. On the grand tier there are 21 private boxes, while there are 12 more on the gallery level. Two hundred and two fixed seats are all that are shown in the two divisions of the gallery. shown in the two divisions of the gallery.

The stage, which consists of a stage and back stage, is 18 metres wide by 9.85m. deep (the back stage being 7 metres wide by 4.8m. deep), and is divided from the dressing-room blocks on either side



by a corridor and solid walls of considerable thickness, effectually cutting-off the chances of fire spreading from the stage to the dressing-rooms.

The width of the proscenium opening has the average measurement, of about thirty feet with a height in proportion.

There are property-rooms at both sides of the back stage, and a large scene-door in the middle. The staircases and entrances to the stage are in duplicate, situated at corresponding angles on the plan,

with lavatories for males and females leading from the landings.

The men's dressing rooms are at one side of the theatre, the women's at the other, the rooms for soloists and "stars" are placed on the stage-level, while other performers find accommodation on the floors above. It will be noticed that there is no room provided for the storage of scenery, by which a great danger is excluded from the building

The original plans from which these illustrations are taken show complete system of heating and ventilating to all parts of the the foundation of the fresh air being admitted under alternate seats, and the foul air extracted by flues in the walls.

On the section, it is worth while noticing the height of the stageblock compared with the auditorium, and to mention the hollow space left under the orchestra floor for acoustic purposes.

Some of the chief dimensions in metres are as follows:

	Metres.
Width between main walls of auditorium	. 16.4
Width of corridors	. 2.65
Distance from curtain line to back wall of auditory	. 16.4
Width of proscenium-opening	. 9.40
Width of stage	. 18.0
Depth of stage	. 9.85
Width of back stage	. 7.0
Depth of back stage	. 4.8
Depth of auditory staircases	. 2.0
Distance from curtain line to grand tier front	. 13.6
Distance from curtain line to gallery front	. 13 85
Height from stage level to the ceiling of auditorium	. 11.75
Height of proscenium-arch	. 9.3
Height from stage floor to wall-plate of roof	. 16.9
Height of stage cellar	. 5.0
Height of back stage opening	. 6.0

This theatre commends itself to our notice as an example of a This theatre commends itself to our notice as an example of a symmetrical plan where every exit, cloak-room, lavatory, dressing-room, etc., is provided in duplicate, the same on the one side as on the other. There is no doubt of the distinct advantages in safety to be obtained by such planning: the exits and staircases are so easily found by the audience and performers. The separation of the various parts of the structure by solid walls of considerable thickness is one of the greatest safeguards against the spread of fire, while the system of corridors between the seats and the exit, the dressing-rooms and the stage tend, in a large measure, to assure the protection of the people, should a fire occur.

E. A. E. Woodbow.

E. A. E. WOODROW.

[To be continued.]

NOTES ON FURNITURE DRAUGHTING.

'N what follows, an attempt is made to arrange and put in available form the answers to a few of many questions that have been

asked by draughtsmen from time to time.

Three kinds of joints occur in furniture making: the angle, butt, and framing-joint. Each of these may be made in several different ways, the method being adapted to the position of the joint or the grade of the work.

Angles may be mitred, keyed, corner-pieced, rounded, or dove-tailed. And dovetailed joints may be plain, lapped, or mitred.

The mitred angle, (Fig. 1), is a joint familiar to every one. The edges joined are cut at a bevel bisecting the angle between them when united. The union is made by butting the pieces and gluing them together. As this does not make a strong joint unless supthem together. As this does not make a strong joint unless supported in some way, it is sometimes keyed. That is, the joint is mitred in the usual way; then when the glue has set, saw-cuts, some inclined upwards and some downwards, are made across the angle so as to cut equally into both of the pieces forming the mitre. In the saw-cuts, thus made, are glued small strips of wood. These are the keys. They do not, however, materially strengthen the joint, and are suitable for small work only. Where greater strength is necessary, corner-pieces, blocks square or triangular, are glued on the inner side of the angle of the mitre.

The rounded corner, (Fig. 2), might be called a tongue-and-groove joint, as the parts joined are practically tongued and grooved together. The tongue is placed on the inside of the angle, so that as much wood as possible may be left between the groove and the end of the piece cut.

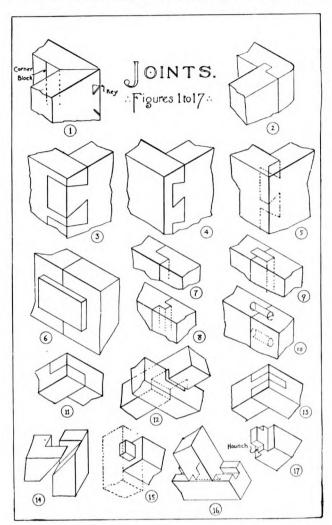
end of the piece cut.

Dovetailing is, perhaps, the best and strongest method of joining two pieces at an angle. When the joint is made in such a way that the full thickness of each of the pieces joined shows, and the shape of each dovetail can be seen, the joint is a plain dovetail, (Fig. 3).

This is the opposite of the blind dovetail, (Fig. 4), which is made in such manner that the joint is seen at the side only. A joint of this kind is sometimes called a lap dovetail. It is commonly used for fastening the sides and front of drawers together. In some instances, it is desirable to have all indications of the dovetailing hidden. Then use is made of the mitred dovetail, (Fig. 5), a combination of the mitre and the dovetail. The dovetails are cut-in half the thickness of the pieces, and the mitre in the remainder. There is also a combination of the dovetail and rounded joint, in which the dovetails are, as in the mitred dovetail, but one-half the which the dovetails are, as in the mitred dovetail, but one-half the thickness of the pieces.

The butt-joint is used where two pieces of wood are joined together in the same plane. It may be plain, strengthened, rebated, matched, slip-tongued, or dowelled.

The plain butt, (Fig. 6), is the joining of two pieces to make a larger, the only connecting medium being glue. This, properly made, becomes quite strong, the wood often giving way before the



joint opens. It is almost invisible in the majority of woods, if made so the grain of the wood is nearly parallel with the line of contact, as the amount of glue used is small. There are, however, occasions when the plain butt is not strong enough and it is desirable to

Where one side of the pieces joined is not exposed to view, blocks glued across the joint will do this. The grain of these blocks should lie in a direction parallel with the grain of the boards, otherwise the block, glued fast to these boards, will prevent them from contracting as the wood dries, causing cracks to appear; or the block will become loose. But when the grain of the pieces and of the blocks

are parallel, both shrink together.

A joint, not as commonly used in furniture as in architectural woodwork, is Figure 7, called the rebated joint. It has very little, if any, advantage over the plain joint when used in the same

manner.

The matched joint, (Fig. 8), is the same as the matched-and-beaded joint of the joiner, with the bead omitted. A tongue or projecting piece along the middle of one piece is matched to a groove in another. When well made, this is a good joint, but it is not as much used as is the slip-tongue, (Fig. 9), formed by cutting grooves in each of the edges to be joined, so they are directly opposite each other throughout their entire length. Into them is glued a hardwood strip called the tongue, or slip-feather.

The joint most commonly used by cabinet and furniture-makers is the dowel-joint, (Fig. 10). It is undoubtedly the best where the wood is of sufficient thickness to permit its use. A dowel is a wooden pin used for fastening two pieces of wood together by inserting part of its length into one piece, the rest of it entering a

wooden pin used for fastening two pieces of wood together by inserting part of its length into one piece, the rest of it entering a corresponding hole in the other. Sometimes a number of dowels are fitted tightly into holes bored for them in one of the pieces to be joined. The other piece has corresponding holes bored in it, in which the dowels also fit tightly when the two pieces are glued together.

together.

Framing-joints are mitred, halved, half-mitred, tenoned, stubtenoned, haunch-tenoned, and dowelled. The first and last of this list need no further explanation, they having been described as angle and butt joints. The second halved or half-lap joint, (Fig. 11),

is used to join two pieces at angles to each other, or end to end in the same direction. As can be seen from the illustration, it is in the same direction. As can be seen from the illustration, it is made by cutting away half the thickness of the pieces to be joined, and then pinning or gluing them together. This is neither a neat nor good joint, though it has strength and the ease with which it is made to recommend it. Its true use is shown in Figure 12, where two pieces crossing each other are halved together.

A combination of this joint and the mitre is termed the halved-mitre, (Fig. 14). The face exposed to view is mitred, the other face, usually hidden, is like the ordinary halved joint.

Perhaps the true framing-joint is the mortice and tenon, with its combinations. But since the introduction of dowels, the tenon has almost gone out of use with furniture-makers. They consider it old-fashioned. And owing to the shrinkage of the tenon, or the care-

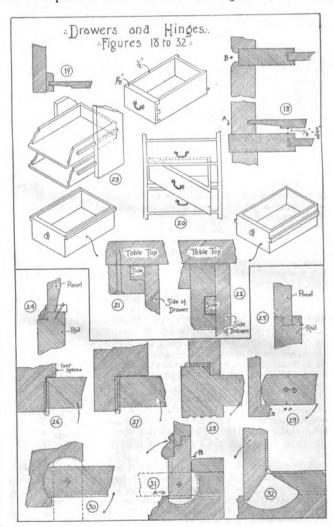
almost gone out of use with furniture-makers. They consider it old-fashioned. And owing to the shrinkage of the tenon, or the carelessness with which it is made, it does not seem as strong or equal to a dowel-joint. Its simplest form is where a tongue on one of the pieces is fitted into a notch, as it were, sawn in the end of the other, (Fig. 13).

The true mortice is cut near the end of one piece to receive the tongue (tenon) of the other, (Fig. 15). The tenon is not the ful width of the piece on which it is cut, as in the first example.

A method somewhat similar to the first is sometimes employed in making the frame for a panel. Particularly if the panel is one of several set in a groove ploughed in the frame. Then the groove is run the whole length of two of the framing pieces, and those at right angles have tenons cut on them which fit in the grooves as does the panel. This kind of framing has been given the name of stub-tenon, angles have tenons cut on them which it in the grooves as does the panel. This kind of framing has been given the name of stub-tenon, (Fig. 16). When the pieces to be joined are wide, the tenon would be so large that too much wood would be cut away for the mortice, consequently two narrow tenons are cut, and between them is left a sort of half tenon, called the haunch. The haunch is sometimes used on each side of a single tenon, and it is so shown in

The joints described above include types of nearly all those met with in furniture work. Others that may be used will probably be found to be a modification of those mentioned.

In laying out the details of furniture, such as usually come within the province of the architectural draughtsman, the drawer



occurs as frequently as any part. It usually slides, though, as will be seen later, it may swing.

The front is made from three-quarters inch to seven-eighths inch

thick; the bottom, back and sides, three-eighths to one-half inch. A method for determining the depth of a drawer inside is to add one-eighth inch to the thickness of the bottom, and deduct the sum

from the exterior depth; or vice versa, the exterior face of a drawer equals the sum of the interior depth added to the thickness of the bottom plus one-eighth inch, (Fig. 18).

The sides are usually lap-dovetailed to the front, and dovetailed

to the back. The bottom may be grooved into the front and sides, or into strips glued on the sides for the purpose, (Fig. 19). It is made a little longer than the drawer, to allow for shrinkage, and the back rests on it. That shrinkage will take place is certain, and that made a little longer than the drawer, to allow for shrinkage, and the back rests on it. That shrinkage will take place is certain, and that it may be in the direction desired, the grain of the wood should run across the width of the drawer. It is not advisable to fasten the bottom, except, perhaps, it be nailed, or screwed at one end only, preferably the front. Then when the bottom moves, it does not pull away from the front, or crack, leaving an opening for articles to fall through. A drawer for a corner cabinet or closet may be of such shape that it is impossible to have it slide; then it is pivoted, or hinged, to open like a door, (Fig. 20).

Drawers of either of the above kinds are separated from each

other by a frame about three-quarters of an inch thick on which they slide. This frame ought to be filled with a "dust" panel, that when the drawer is removed from the pocket, it is impossible to reach the contents of the drawer below. The appearance of the front is very much improved if this frame is allowed to project one-sixteenth inch

or more beyond the drawer; or, the drawers made to lap over the rail a little, (Fig. 18) — A and B.

There is in use on hall stands and tables of a similar description, a species of drawer which may be said to hang beneath the top. crude form of this drawer is seen on nearly every carpenter's bench or draughting-table, (Fig. 21). It has, at least, one fault which renders it quite unsatisfactory for use in good work. The friction of the sides against the top causes it to run hard and unevenly unless

loosely hung.

To avoid this, the drawer may be hung between two pieces fastened to the table top, and having in them grooves, in which strips screwed to the sides of the drawer slide, (Fig. 22).

On tables having an overhanging top, a drawer cannot always be pulled out sufficiently to permit the full interior being seen. This occasions the pulling of the drawer entirely out, and it, with its contents, drops to the floor. Such a drawer may be provided with a stop, and the back placed in such a position that it is on a line with the edge of the table when the drawer is full out. That is, the sides of the drawer are larger than the interior learth and the sides of the drawer are longer than the interior length, and support it when it is pulled out.

Another class of drawer is the so-called "English drawer," which is a drawer without a front, hung between the two sides of a cup-board, (Fig. 23). They are used for wardrobes, etc., and are

board, (Fig. 23). They are used for wardrobes, etc., and are placed close together with no parting strip between them.

Mention was made above of a dust panel between two drawers. This is set in a groove in the bearing-rail and runners. Care is taken not to glue or fasten it anywhere. Too much stress cannot be laid on the fact that panels should never be glued in the frames. If they are, they will surely split when shrinkage causes them to move a little. It may be well to call attention once more 1 to the correct way of framing panel-work so as to avoid accidentally fastening the panel, (Fig. 24). It will be noticed that the moulding is set in a rebate on the style. This moulding is first glued in place, the panel then set-in from the back, and the loose moulding tacked in. The brad holding it passes through into the rail and does not interfere

with the panel in any way.

Panel-work for dust-panels, back-boards, etc., may be flush on both sides or on one side only. The panel, flush on both sides, is an init previously described, application of the tongue-and-groove joint previously described, (Fig. 8). The panel flush on one side is a sort of rebate joint, in which the panel is held by a bead or loose moulding tacked in the

rebate, (Fig. 25).

There are two common methods of hanging doors; either with hinges or with pivots.

The door in Figure 26, when open at right angles, reduces the opening nearly the entire thickness of the door. opening nearly the entire thickness of the door. To obviate this, when using a hinge, the door is hung in a rebate, as deep as the door is thick, on the hanging style or post, (Fig. 27). Or, the pilaster itself is made a part of the door and hinge, (Fig. 28). Many times it is desirable that the hinge should not be seen. Then the pivot, or pin-hinge, is used, (Fig. 29). This may have the fault of diminishing the door-opening, unless the whole thickness of the door is related in the roet. (Fig. 29). is rebated in the post, (Fig. 30). It is obvious from the figures how to lay out the position for the pivot of such a hinge; but it is well to notice that the centre is placed so the distance, BA, is a sixteenth or one-eighth of an inch more than the distance, DA, (Fig.

Desk or cabinet lids opening down need to be supported in some Elbow-braces or chains are used by some manufacturers. Yet when strong pivot-hinges are employed, visible supports can be done away with, particularly in cabinets, or places where no great weight is likely to be placed on the lid. To accomplish this result, construct the lid as shown in Figure 31, so when open, it rests on A

and bears against B.

A similar method, employing a hinge, is shown in Figure 32. This is not as strong a method as that previously described, for the entire strain comes on short hinges. When pivots are used, the strain also comes on the hinge, but the method of putting it on,

and its peculiar construction prevents the screws holding it from pulling out. It may also be made large and strong, as it is entirely hidden from view.

Chairs are the most difficult of the different pieces of furniture to draw. The dimensions depend so much on the statures of the persons who are to use them, that it is almost impossible to give any Moreover, the proportions vary with the purpose for which the chair is intended.

The average figures taken from a variety of good chairs are: height of the seat above the floor, eighteen inches; depth of the seat, nineteen inches; the top of the back thirty-eight inches above the floor. A chair built to these dimensions might not look badly or be uncomfortable.

Usually, the seat increases in depth as it decreases in height, while the back is higher and slopes more. This will be noticed in easy-chairs, or large, upholstered pieces. It is only the small occasional chair found in reception-rooms, or the chairs tor use at a desk, or table, that are as high as eighteen inches in the seat.

Chairs for ladies are sometimes made as low as fourteen inches, but unless deep and well-upholstered they are not comfortable. Twenty inches inside is a comfortable depth for a seat of moderate size; increasing this from one to four inches for large or easy-chairs. The width of the seat is largely a matter of design, except for arm-chairs, which ought not to be less than nineteen inches at the front, nor less than eighteen at the back, between the arms. Chair-arms are about nine inches above the seat. The inclination of a chair-back should seldom exceed four inches, or the slope should not be more than one-fifth the depth of the seat.

A chair with arms may have a more sloping back than one without. In order to give a chair which has a back sloping considerably an appearance of stability, it is usual to incline the rear legs some-

what, so as to spread them where they touch the floor.

Dining-chairs are high, and have straight backs; easy-chairs are low with a reclining back; rocking-chairs are low in the seat, seldom higher than sixteen inches, and have high backs that the head may rest against them.

Most chairs have casters, and an allowance is made for them of one and five-eighths inches from bottom of wheel to the lower end

of the chair-leg.

Sofas, divans and lounges differ from chairs principally in the increase in depth and length of seat. A lounge is six feet long, and thirty inches wide, about. The length of sofas and divans is

governed by the space they are to fill, and their depth is from twenty to twenty-four inches.

Tables vary in shape and size almost as much as chairs. Writing and dining tables are made two feet five inches high, and the species of sideboard, called a carving table, is made three feet high to the principal shelf; but tables for general use are two feet six inches high. The constructive work on a table is largely confined to the making of the top and fastening it in place. As the top is exposed to view perhaps more than any other portion, nicely-figured wood is desirable. The best figures are found in veneers, fortunately, for large tops should be veneered to prevent their cracking. When it is desirable that the edge of a table-top appear to have considerable thickness, even more than is necessary constructively, a frame, plain or moulded, is fastened to the under side of the top all around the edge. If possible, the grain of the wood used in this frame should run in the same direction as that of the top. It is well to note that this frame ought not to be fastened so as to prevent the top from shrinking or swelling. That is, if the grain for any reason does not correspond with that of the top, but is at right angles to it, no glue should be used to hold the parts together. The table-top should not be fastened so that it cannot move as it swells or shrinks. For small stands, where the shrinkage is slight, screws driven through the rail of the table, from beneath, into the underside of the top are sufficient to hold it in place. But when the top is large, it is better to screw tongued blocks to the under side in such a manner that the tongue fits in a groove ploughed in the frame of the table. The frame is tenoned or dowelled to the table-legs.

Dining tables are made to extend from twelve to sixteen feet by

means of slides within the frame. This frame should not be so deep as to interfere with the knees of any one sitting at the table; that is, there must be about two feet clear space between it and the

The smallest size practicable for the knee-hole of desks and library tables is two feet high by one foot eight inches wide. The width to be increased as much as possible.

Dressing or toilet tables are made with a swing glass. As they are used by a person sitting, the centre of the glass is on a level with the eye of the person seated, about three feet six inches from

Bedsteads are classed as single, three-quarters and double. single bed is three feet to four feet wide inside; a three-quarter bed, four feet to four feet six inches; a double bed, five feet. Three feet six is a good width for single beds. All bedsteads are six feet six inches to six feet eight inches long inside. Footboards are from two feet six inches to three feet six inches, and headboards from five feet to six feet six inches high. The sides are from six to twelve inches wide, and are dowelled or tongued into the posts where they are held in place by screws specially made for the purpose.

Bureaus vary in shape and size to such an extent that it is impos-

sible to say that any dimension is fixed.



Convenient sizes are: 3 ft. 5 in. wide, body; 1 ft. 6 in. deep; 2 ft. 6 in. high: or 4 ft. 0 in. wide, body; 1 ft. 8 in. deep; 3 ft. 0 in.

Commodes are 1 ft. 6 in. square on the top, and 2 ft. 6 in. high. Chiffoniers are 3 ft. 0 in. wide; 1 ft. 8 in. deep; 4 ft. 4 in. high. Cheval glasses are made, if large, 6 ft. 4 in. high; 3 ft. 2 in. wide: If small, 5 ft. 0 in. high; 1 ft. 8 in. wide: If medium, 5 ft. 6 in. high; 2 ft. 0 in. wide.

Washstands of large size are 3 ft. 0 in. long, 1 ft. 6 in. wide, and 2 ft. 7 in. high. Small sizes are 2 ft. 8 in. long.

Wardrobes may be 8 ft. 0 in. high, 2 ft. 0 in. deep, and 4 ft. 6 in.

Waldbook may be 5 ft. 0 in. high, 1 ft. 5 in. deep, 3 ft. 0 in. wide.
Sideboards may be 5 ft. 0 in. to 6 ft. 0 in. long, and about 2 ft.
in. deep.

ALVAN C. NYE. 2 in. deep.

(6) THE SCHEME TO PROCURE A NEW COUNTY COURT-HOUSE. - THE ACTION OF THE ILLINOIS CHAPTER, A. I. A. - OTHER

COPPOSITION TO THE SCHEME. - THE REBUILT ARMORY. - THE ORRINGTON LUNT LIBRARY AT EVANSTON. - THE ART INSTI-TUTE AND ITS ARCHITECTURAL DEPARTMENT. - GIFTS TO THE INSTITUTION.

URING this fall a subject which has given rise to much discusof this tail a subject which has given has the mach discussion has been the most extraordinary plan for the erection of a new county building. The scheme was one which was brought forward under the supervision of one of our largest firms of contractors, and the plans for the proposed edifice were furnished by one of our most prominent architects. These contractors, with the assistance of the architect, have placed before the County Board of assistance of the architect, have placed before the County Board of Commissioners proposals to erect a fourteen-story building to cost nearly five millions of dollars. The plan not only embraces a county building, but an adjoining similar structure to take the place of the present City-hall, should it be considered wise for Chicago to imitate the county, and put, like it, five millions of dollars into a municipal building. The plan is to connect the Court-house and City-hall but means of a country town thus building there together in the structure of a country town thus building. cipal building. The plan is to connect the Court-house and City-hall by means of a central tower, thus bringing them together in one magnificent whole. The city authorities, on being appealed to by the County Commissioners, have unhesitatingly refused to have anything to do with the scheme and have insinuated that no assistance was needed in the matter from the city officials. The proposition submitted to the Commissioners at first dwells upon the urgent need there is for a new county building, the impracticability of remodelling the

is for a new county building, the impracticability of remodelling the old one, and the horrible sanitary condition of the present structure. The authors of the scheme say: "The proposition which we have to submit for your favorable consideration is that we build such a building as set forth by the plans and specifications hereto attached for \$4,832,000, payable in four per cent Cook-County gold bonds, payable in twenty years from their date: the bonds to be placed in the hands of a trustee to be mutually agreed upon by your honorable Board and ourselves. Said trustee is to turn over the bonds to us in monthly instalments in proportion as the work progresses, and two hundred and fifty thousand of them to be reserved by said trustee for forty days after the building is completed. And we will also supply suitable quarters, conveniently in the business centre of Chicago, for all the departments of the county free of rent. Such quarters cannot all be secured in one building, but will be so planned as to not interrupt the business of the county but will be so planned as to not interrupt the business of the county but will be so planned as to not interrupt the business of the county while the new Court-house is being constructed. As you will see from the plans, the building will consist of one story below the side-walk level and fourteen above. This will give ample capacity for all the needs of the county and seven or eight entire floors to be rented to private individuals, from which a revenue can be derived of from three hundred and fifty thousand to four hundred thousand dollars per annum. This will pay the interest on the bonds and create a sinking-fund that will pay off the principal of the bonds at their maturity. Thus the county will get a new and entirely satistheir maturity. Thus the county will get a new and entirely satisfactory court house that will pay for itself, and at the end of twenty years the county will have the building not only free of cost, but it such shape that a very large annual revenue will be derived from it until such a time in the far future when our county has so increased

anth such a time in the far future when our county has so increased as to utilize the eight floors that are now to be rented out."

The rest of the space of the document is taken up with a description of the proposed building, and arranging for the matter of the issuance of the bonds by a vote to be taken on the subject at the approaching November election. The Board of Commissioners, on the reading of this proposition passed a resolution that the vote the approaching November election. The Board of Commissioners, on the reading of this proposition, passed a resolution that the vote for the issuing of the five-million-dollars worth of bonds be taken in November. Further, is was resolved at the same time, that is, on the fourth of September, "That on the twenty-sixth day of September, 1894, complete plans and specifications describing the building the bidder proposes to erect will be received at the office of C. Maurer, Superintendent of Public Service for Cook County, Court-house,

Chicago, Illinois. All proposals must be accompanied by a certified check for two hundred and fifty thousand dollars, to be retained by the Comptroller until the bonds of the contractor herein referred to are duly approved, etc.

"The Board of County Commissioners reserves the right to reject "The Board of County Commissioners reserves the right to reject any and all bids, and in selecting proposals for acceptance will consider the amount of bids, the plans and specifications accompanying bids, the advantages offered the county by the accompanying bids."

This is the sum and substance of a matter which has been the text

for lengthy editorials in the local press and of most animated discussions and condemnation in architectural circles. The fact that but three weeks were allowed by the Commissioners for plans to be made, and for contractors to get in their bids, has naturally given rise to unfavorable comment, not only among members of the architectural profession, but by the public at large. The time allowed before the plans should be handed-in makes the request for them a perfect farce. Every one who knows anything of such matters knows that three months is none too much time to allow for the preparation of such plans for such a building, and even this amount of time consumed in such work would make no allowance for the preparation of specifications and the receiving of bids. The three weeks allowed by the Commissioners would barely be sufficient time for the preparing of simple sketches, and although a certain amount of ignorance on the part of the general public concerning matters architectural is to be expected, this becomes the most glaring case of it on record. It would seem as if even the Commissioners must have known that to get ready working-plans for a five-million-dollar building would take considerable more time than three weeks.

The renting part of the scheme makes of the financial side of the enterprise an attractive feature, but the contractors fail to note, that in the abundance of high office-buildings at present in Chicago, the desirable leasing of them is not always a foregone conclusion, otherwise this same firm might not have the large part of a modern and commodious structure, in which it is largely interested, to place at the disposal of the county officials during the construction of the pro-

posed court-house.

At the regular monthly meeting and dinner of the Illinois Chapter of the American Institute of Architects, in September, this subject was discussed. N. S. Patton in an address on "The Architectural Responsibility to the Community as the Conservator of good Architecture" incidentally dwelt upon the court-house scheme. He spoke with force against the proposed plan, and advocated the placing on the Lake Front, where in combination with the Art Institute and the Public Library it would form part of a really fine group of buildings, a court-house which should not be without architectural pretensions, and at the same time be of a character suited to its use, and not a fourteen-story office-building similar to any number of other office-buildings in the city. At the close of his address Mr. Patton offered the following resolutions:

the following resolutions:

Whereas, The agitation for a new County Court-house, a new Customhouse and other public buildings is evidence that Chicago is likely to erect, within the next few years, a number of important public structures, which if not carefully considered as to location and character of architecture, will be a disgrace rather than a credit to this city; therefore.

Resolved, By the Illinois Chapter of the American Institute of Architects, that before any of those buildings are started, there should be devised and adopted a general scheme for the location and grouping of such buildings, in a manner to contribute to the beauty of our city, and that a method should be adopted for the selection of designs that will secure the services of our best architects, and insure to the city edifices that will be practical in arrangement, economical in cost, and at the same time will stand as noble monuments of art. It is acknowledged that the chief glory of the recent Columbian Exposition was its architecture, for which credit must be given to the architects who worked in the carrying out of a carefully studied general plan. We believe that in the same manner the architects of our city, working in harmony, can give the city a group of buildings worthy to be perpetuated. We believe that this Chapter can be of service to the public in accomplishing this result. Therefore, it is further

Resolved, That this Chapter proceed to elect by ballot a Standing Committee on Public Buildings and Grounds to consist of three members, to serve until October, 1895, and thereafter such committee to be elected at the annual meeting in the same manner as the officers, to serve one year. It shall be the duty of this committee to consider the question of the character and location of our future public buildings, including municipal and Government buildings, museums and other public institutions in the interest of good architecture. It shall be the duty of this committee to consult with citizens and organizations interested in the

The communication to the County Board was as follows

The communication to the County Board was as follows:

"Gentlemen, — The proposal to erect a new County Court-house is one of especial interest to the architectural profession. If the present building is inadequate for the uses of the county, it should be replaced by a new structure that will be suited to its purpose and an honor to the country. We believe that the method of securing plans by the advertisement recently published will not accomplish such a result. In the first place, it will be impossible for an architect to prepare plans in the space of three weeks. Three months would be a short time for such a plan and additional time would be receded to secure proposals. Therefore, there can be no competition needed to secure proposals. Therefore, there can be no competition

and no proposals can be submitted other than the one already laid before your Board. We believe, also, that no good result can come from a consideration of proposals until the plans have been first made and adopted by your Board. Furthermore, we most respectfully protest against the erection of such a building as the one that has been proposed, or any similar building, without a careful examination into its merits. We believe that this county should have a building that would be a gradieable monument of ast as wall have a building that would be a creditable monument of art as well as an economical and useful structure, and we believe that in this we voice the sentiment of this community. We believe that our architects are capable of giving to the country a satisfactory building, if the opportunity be given them. Believing that your Board is seeking to serve the best interests of the people in regard to the proposed building and that you desire the cooperation and advice of all who are interested enough to study the problem, we respectfully tender the cooperation of the Illinois Chapter of the American In-stitute of Architects, and, as an indication of the attitude of our Chapter, we submit herewith a set of resolutions, which we have adopted."

After the adoption of the resolutions and the framing of the above

communication, the proposed committee was appointed.

The Real Estate Board is also strenuously opposed to the proposed Court-house plan, and is taking active measures to defeat the authorizing of the issuing of the bonds at the approaching election.

One proposal has been sent in to remodel the old Court-house building at a cost of one million dollars. It is proposed in this plan to eradicate the objectionable features of the old building, while the public character is still retained. This idea does not seem to be accepted with enthusiasm, however, and will probably not be seriously entertained by the Board. The fact that the city ordinance against high buildings would be violated by the erection of the proposed fourteen story sky-scraper does not seem to have troubled the official conscience of the County Board. This conscience is, however, liable to a change of setting at the approaching election, so even should the issuance of the bonds be authorized, the next commissioners may be entirely opposed to the whole scheme

Several public buildings have this last month been formally taken possession of, one being the new Armory which takes the place of the old one which was burned a year ago last spring, just as it was nearing completion. It was possible to use, in the main, the old walls of the former construction, and, in fact, as far as the memory of the casual observer can be trusted, the new building seems to be a reproduction of the former one. The walls up to the height of forty feet are of stone, entirely without openings, while above this they are of brick. The chief feature of the façade is the large arched entrance for the passage of troops formed in marching order. The building, though having but few architectural features, could be called a successful one, as is usually the case when the use and character of the building are in harmony. Small three-storied round towers are at the corners of the structure, which, with their embrasured windows, could command both Sixteenth Street and Michigan Avenue in case of riots or in times of disturbance. The building occupies a ground-space of pearly one hundred The building occupies a ground-space of nearly one hundred and seventy-five teet square. The ground-floor is devoted to the drill-hall, being a space without supporting columns or pillars, the upper floors being suspended from the roof of the building. The gallery above the drill-room contains the headquarters of the regiments, comprising seven company-rooms twelve other rooms and banquetcomprising seven company-rooms, twelve other rooms and banquet-room, library and dining-room. On the floor above this are the twelve company-lockers, rooms for the bugle and drum corps, the cycle corps, the non-commissioned staff, the Gatling section, the veteran corps and the gymnasium. The attic and a billiard-room, a hundred and twenty feet long, occupy the third floor, while four rifle-ranges and eight bowling-alleys occupy space in the basement.

Another semi-public building, which has this month been made ready for occupancy, is the Orrington Lunt Library at Evanston.

This building is situated on the college campus of the North Western University. It bears the name of the man whose large gift made its existence possible. The building is of buff Bedford stone, with red tile roof, and is in style an adaptation of the Italian Renaissance. It embodies in its interior arrangement many of the ideas of the late Dr. William Poole, the old stack-system being abandoned. The outlines of the exterior are good, and in the matter of detail, the style of the whole has been well carried out. The beauty of the interior has been considerably increased by the fact that the buildingcommittee was wise enough to allow some expenditure to be made in the matter of wall-decoration. In fact, in this special feature, the building is conspicuous among similar structures of its kind in this vicinity, and, indeed, is probably the most artistically-decorated building of its kind in the West. In the vestibule is found the most elaborate work, four large panels painted on canvas being introduced into the walls. The subjects of the panels are Roman Law, Hebrew Prophecy, the Greek Libation Pourer and the Truth Seeker before the Sphinx, all representing different types of Mediterranean culture, Greek, Roman, Hebrew and Egyptian. The subjects are treated in a decorative manner, and are in keeping with the Classic feeling of the building, the Egyptian one being especially fine. In the reading-room there is a trieze, the chief feature of which are shields, thirty-two in number, bearing book-marks of different publishers.

In October, at the regular monthly meeting of the Illinois Chapter of Architects, the annual report was read, and part of it, as showing what this Chapter is doing, may be, when compared with work of

other Chapters, of general interest. Among the most important subjects to which this Chapter has lent its attention and influence are the following: The successful effort to suppress the irregular methods of appointing Chicago building inspectors under the new ordinance; the assistance given by it to the American Institute of Architects in the matter of the controversy between that body and Architects in the matter of the controversy between that body and the Secretary of the Treasury; its action in protesting against the proposed plan for a new Cook County building, and in electing a standing Committee on Public Buildings and Grounds. Many interesting papers have been read before the Chapter, and the membership, which at the beginning of the year numbered seventysix, now makes a showing of eighty-one names.

The Art Institute has just published its annual report and it is

The Art Institute has just published its annual report and it is most pleasing to note the decided advance the institution has made within the last two years. During the years '92-'93, the number of students in all the departments numbered nine hundred and twentynine, while in '93-'94 there was a slight falling off, owing, no doubt, to the financial depression, the number of students being only nine hundred and twenty-three. The capacity of the school-rooms was, however, taxed to its utmost, and this year several new school-rooms shows a figure of over six hundred, which is larger than the opening list of any previous year, and will, without doubt, bring up the number of attendants to a larger figure than that of any preceding terms. The school itself is self-supporting and more than that even, the receipts this last year exceeding the expenses by one hundred that the Columbian and fifty-seven dollars. A medal was conferred by the Columbian Exposition upon the department of ornamental designing, "a department," so says the annual report of the Director, "which is doing work parallel to that of the best schools of design in the East." It is hoped that before long a workshop will be added to the study rooms, where students may carry out in the actual their designs for

wood-carving, frescoing, mosaics, stained-glass, etc.

The architectural school opens with unusual enthusiasm this year, and a more systematic course of study than heretofore is to be the result of exertions on the part of those connected with this depart-Connection has been made between the Art Institute archipermit of more extended and thorough courses in the scientific branches. This department is now said to be third in point of numbers among the schools of the country. The usual course numbers among the schools of the country. The usual course of lectures will begin in this department, each course being more fully elaborated and illustrated than in the preceding years. The Institute authorities have determined to popularize these lectures, and will consequently throw them open to all members holding their annual membership ticket. It is to be hoped that in this way some little knowledge of the history of architecture may be scattered broadcast.

Many of the gifts to the Institute have from time to time been mentioned in these letters, but the entire list, as found in the curator's report for the years '93-'94, is most gratifying to those interested in the institution. In his report the librarian says, "The library at present contains one thousand three hundred and forty-six volumes, eight hundred and thirty-two in the Reference Department, that is, books not to be taken from the room, and five hundred and fourteen in the Circulating Department, circulating to students only. fourteen in the Circulating Department, circulating to students only. During the past two years we have added one hundred and sixty-five volumes. An occasion which overshadows all other acquisitions of the library is a gift from Dr. D. K. Pearsons, of the collection of autotypes, under the name of the 'Mrs. D. K. Pearsons's collection of Carbon Photographs.' The whole collection will number eighteen thousand six hundred sheets, of which fourteen thousand eight hundred and eighty-seven have thus far been received. They are conveniently installed, are freely open to all who consult the library, and are much used." It is to be hoped that the architectural department will receive full attention, as it would be of inestimable value to the student not able to provide even the foundation of his value to the student not able to provide even the foundation of his own library. The growth must necessarily be slow, owing to the expensiveness of technical books, and the comparatively small amount the Institute has to expend on the library. The chief additions must naturally come in the way of gifts.

A recent present has been made in the form of a bulletin-board.

Heretofore, a blackboard placed at the really beautiful entrance of the building has somewhat marred the artistic effect, but has nevertheless posted the public as to the hours for visiting the galleries, and the amount of entrance-fee to be paid. The new bulletin-board consists of a bronze sheet on which is cast the words "Art Museum of the Art Institute of Chicago. Open daily from nine until five, Sunday, one to five. Admission, twenty-five cents. Free, Wednesday, Saturday and Sunday," in letters which harmonize with the Classic lettering in the front façade of the building. The bulletin rests between two uprights supported on clawfeet and surmounted by two griffins holding in their mouths a bronze rod. From this rod can be hung on certain days a bronze piece bearing the inscription "Free to-day." The whole thing, though but a small matter, adds a great deal to the general beauty of the principal entrance, and is great improvement on the former blackboard of primitive style.

The fall exhibition of American painters is now being held at the Institute, and aside from the interest which this exhibition always excites, an additional zest is added, by the fact that the Field Memorial room is for the first time opened to the public. This room is the one set apart to hold a collection of valuable paintings

once the property of the late Henry Field, and has been decorated and adorned by Tiffany. A description will be given of it in a later

POMPEII.

III HE Naples correspondent of the Daily News in a recent letter asks how many people, when they visit Pompeii, remember anything of what has been learned of its early history? To know something of it adds so much to the interest with which the dead city is contemplated that every one must feel grateful to Professor Man for having prefaced his most admirable "Führer durch Pompeii," quite lately published under the auspices of the German Archæological Institute in Rome, with a readable brief introduction. As the guide is not to be published in England until two or three years are passed, I will here give a sketch of what Professor Man, the greatest living authority on Pompeii, tells us about its history.

The city of Pompeii already existed in the sixth century B. C., as

is proved by the remains of its oldest public building, the Doric temple. But the date of the first foundation of the city is quite unknown. It was first inhabited by the Oscans, a race whose language is imperfectly known through some inscriptions. The name of Pompeii is derived from a word belonging to this ancient language, the word "pompe," or "five." The city was wrested from its original inhabitants by the Samnites when they advanced from the mountains to the coast in about the year 420 B. c. The Oscans and Samnites together, under the influence of the neighbororgans and Sammies together, under the initiation probably far outstripping that of the contemporary Romans. In the years 342 B. C. and 290 B. C. the Sammite wars led to the subjection of Pompeii by Rome. The city was drawn into the Roman confederacy, during Rome. The city was drawn into the Roman confederacy, during which it preserved its independence as to its home affairs. It was only in the year 80 B. C., when the Samnites were conquered by Rome, that Pompeii became Romanized by a colony of veterans under P. Sulla, a nephew of the then Dictator. The city was presently named Colonia Cornelia Veneria Pompeianorum, after the family name of the Dictator Sulla and the goddess of whom he was a special devotee, and who then became, as the Venus Pompeiana, the tetelogy divisity of the city. the tutelary divinity of the city. At the same time a suburb was founded, probably by the citizens who had been driven out in favor of the Roman veterans, which was named Pagus Felix, after the by-name of the Dictator, and later, in honor of Augustus, Pagus Augustus Felix. The inscriptions which have been found at Pom-peii show that many state offices existed in pre-Roman times. There peil show that many state offices existed in pre-Roman times. was a Kombennion, National Assembly or Senate, it is not known which; a Medix or Medix Tutix, the chief of the city; a Koaisstur, or Quæstor, who was probably entrusted with the city treasury; and two aidili, ædiles, employed in the making of roads. Under the and two aidili, ædiles, employed in the making of roads. Romans, after 80 B. C., there were the usual decuriones, ædiles and other public officers, also many priests, priestesses, ministers and magistrates. Pompeii was built on the point of an ancient stream of lava, running towards the sea, close to the then full-flowing river Sarno. The city was the natural southeastern port of the plain through which the river flowed. The sea was then not more than 1,500 feet distant from the city, the river serving as a harbor. On the banks of the river stood a small suburb of the city. From the busy port were exported not only the produce of the country in the interior, but also the products of the plain itself, namely, wine and vegetables. The lava was cut into millstones, which formed a and vegetables. The lava was cut into inhistones, which formed a large article of export in the second century B. C.; but later on, this source of profit ceased to be cultivated, and millstones were even imported into Pompeii from abroad. The harbor town grew more and more wealthy, from the fact that the Roman aristocracy, attracted by its beautiful situation and fine climate, began to settle in the convinces. The inhibitants of Pompeii et that time numbered in the environs. The inhabitants of Pompeii at that time numbered probably 30,000.

It will be remembered that the volcanic mountain, on the slopes of 63 A. D., when many buildings in the city were damaged or destroyed. Traces of the earthquake that happened then are still to be seen in the excavated city. Then in 79 A. D. came the awful eruntion which we want to be seen in the excavated city. which Pompeii stood, re-awoke after ages of inactivity in the year the excavated city. Then in 79 A. D. came the awful eruption which, while the people were still repairing the damage done in 63, buried the city to a depth of more than six feet in small pumicestones, and some time later with a rain of ashes to a similar depth. Those pumice-stones and ashes were not red-hot, as is generally believed, as the wood which has been found seemingly carbonized has only been thus changed by chemical processes. Traces of real burning on the mural paintings are very easily distinguished from the red tint which, in some unexplained way, overspreads a great portion of the wall-paintings where these have come in contact with the ashes. The manner in which Herculaneum was buried was very different, for there the pumice and ashes do not lie in regular strata as in Pompeii, but are mixed together in a sort of muddy paste, as in Pompeii, but are mixed together in a sort of muddy paste, which, hardened into stone during the course of time, makes excavation difficult. After the catastrophe the upper stories of the houses in Pompeii protruded above the ashes, showing where the city lay. Digging on a large scale then took place, and building-material and valuable objects were carried away. All the marble, except a very few fragments, were removed in ancient times. Later on, the remaining upper stories of the houses were destroyed by time, as very little of them has been found. In 73 A. D. most of the inhabitants escaped.

It has been calculated that only 2,000 of the 30,000 were killed on the spot, but how far the fugitives were able to run is not known; the fact is that many of them were overtaken and buried by the falling ashes at a place on the banks of the Sarno not far from the city, for in 1880 and 1881 many skeletons, together with many valuable objects now kept in the Naples Museum, were found there.

Though the existence of Pompeii under the fields that then covrough the existence of Fompeli under the fields that then covered it was discovered as early as 1594, the city has only been regularly excavated since 1748, and till the year 1825 only the public buildings round the Forum, the Theatre, the Street of Tombs had been laid open to the view. The present reasonable and scientific mode of excavation was begun by Professor Fiorelli in 1881, and continued by Professor Ruggieri, who has only just resigned his office in consequence of his advanced age. At present party half office in consequence of his advanced age. At present nearly half of the whole city is excavated, and the circle of its walls determined. It is probable that the still unexcavated part will not contain many public buildings, perhaps a few temples and baths, but if the present slow rate of excavation be continued it will take another fifty or sixty years to lay the whole city bare. The shape of Pompeii is oval; the city walls follow the slope of the lava-hill on which it is built, only crossing that hill at the part where it rests against Mount Vesuvius. Pompeii was laid out on a fixed plan. The two principal streets, Strada di Mercurio and Strada di Nola, crossed it from north to south and from west to east. The side streets run crossways to these two, and only slightly deviate from the straight line at certain points. The city wall is preserved in its northern part and a great portion of its southern course, but on the west and at the west corner of its southern course it was already pulled down in ancient times, and its place occupied by houses. The wall has in ancient times, and its place occupied by houses. eight gates, to which distinguishing names have been given. The public buildings that have been found are situated in two groups—one around the Forum and the other near the Stabian Gate. But the public baths are distributed irregularly all over the city. The most important houses have been named according to very different reasons, some after distinguished persons who have witnessed their excavation; for example, the "House of the Grand Duke of Tus-"others after objects of art found therein, as the "House of the Faun," and others again after their supposed proprietors, as the "House of Sallust." It is well to take notice of these names, as it is under them that the guides point out the ouildings. A more reasonable method of naming is that from the bronze seals discovered in the houses, engraved with the names of the owners, or from inscriptions.

houses, engraved with the names of the owners, or from inscriptions. The oldest building in Pompeii is the destroyed Doric temple, which belongs to the sixth century B. C. The city wall is also extremely ancient, but even an approximate date cannot be determined. The rest of the buildings belong to two distinct groups, according as they were built before or after the founding of the Roman colony in 80 B. C. The pre-Roman edifices are artistically the best. They were built under the direct influence of Greek culture, and show the pure, beautiful forms of the Doric, Ionic and Corinthian styles. Especially remarkable is the spirited style of the Corinthian capitals, built of no costly material. The columns and the beams are generally of gray tufa-stone, coated with white or and the beams are generally of gray tufa-stone, coated with white or colored stucco; marble is rarely found. The technical work is also imperfect. But the Roman buildings, though of an inferior and often coarse style are made of annual restaurant. imperfect. But the Roman buildings, though of an interior and often coarse style, are made of superior material, such as marble, or the fine limestone called travertine, and the workmanship is better. The Basilica the Temple of Apollo, and probably the Temple of the fine limestone called travertine, and the workmanship is better. The Basilica, the Temple of Apollo, and probably the Temple of Jupiter, the oldest portions of the Forum, the so-called "School," the Stabian Baths, the large Theatre, the colonnades of the Triangular Forum, the barracks of the gladiators, the Palæstra, the outer portion of the Porta Marina, and the inner portion of the other gates all belong to the public edifices of the pre-Roman period. To the early time of the Roman colony belong the Baths near the Forum the early time of the Roman colony belong the Baths near the Forum, the small Theatre, the Amphitheatre, the Temple of the Capitoline Divinities, and the inner portion of the Porta Marina. All the other public buildings were built in the later Roman time.

The mural paintings belong to four successive styles. The first style, that of the pre-Roman period, consists in imitations of marble decorations in plastic stucco-work. There are no figures or pictures in this style. The second style, belonging to the time of the Roman Republic, consists in painted imitation of marble, and also in realistic, not fantastic, pictures with architectural subjects, showing edifices such as might have actually existed. The third style, that of the Roman Imperial period, till about 50 A. D., is ornamental decoration not the Egyptian taste, distinguished by pure and beautiful forms in tender and graduated coloring. The fourth style, belonging to the time immediately previous to the destruction of the city, shows a peculiar love for fantastic, slender, playful architectural subjects, and is the kind generally understood when we speak of Pompeian wall-paintings. The coloring is less delicate, the ornaments not so pure in form, but all are stronger and more effective. Especially admirable is the rich fancy displayed in the architectural decoration. Almost all the figure-subjects in the paintings of Pompeii belong to

the third and fourth styles.

Pompeii was well and entirely paved in its earliest days, and well covided with drinking water. The Oscan and Latin inscriptions provided with drinking-water. engraved or painted in red color generally relate to elections; a few are announcements of games. What can be deciphered of the "graffite" or scratched inscriptions show that they were individual effusions, the expressions of good wishes, the mention of games, verses, etc. A number of wooden tablets, coated with wax and



inscribed, which were found in the house of the banker, L. Cæcilius Jucundus, have now been deciphered in the Naples Museum and are

mostly receipts.

The few fragments of the ancient Doric temple on the Triangular Forum show that it greatly resembled the famous temples of Pæstum and Selinus. The temple was already destroyed in the early days of Pompeii, and a shabby sanctuary erected in its place.

REGULATIONS FOR THE PRESERVATION OF ANCIENT BUILDINGS IN ITALY.

THE entireness of a building extends in limine to that portion of it which remains, as well as to any traces which may indicate original portions which have been destroyed. It follows, therefore, that in the ordinary course it is not right to proceed to the rebuilding of destroyed portions, inasmuch as such rebuilding may interfere with the study of, or the imaginary completion of the building, and may prevent the recognition of the original portions.

2. The renewal or substitution of portions, even if of secondary

importance, of an architectonic building should only be employed as an extreme measure in order to preserve what remains, and should, therefore, be restricted to those portions which no longer fulfil their

specific purpose or can no longer be repaired.

3. The works of repair (consolidamento) and renewal considered necessary to assure the integrity of a building should be carried out so as to interfere as little as possible with the general effect of the

building.

4. In this respect, it should always be borne in mind, that the artistic value of a building is frequently to be referred to the modifications occasioned naturally to the materials, which testify to the past age of the building and accentuate the good and evil of the materials, as well as of the methods of construction, and consti-tute a proof and a guaranty of their duration and normal stability. The pictorial effect of a building should be taken into account, as well

as its relation to the atmosphere (ambiente) formed around it by time.

5. The restoration of a building may be undertaken under the following conditions: — The reëstablishment of portions of a building in their original position, or the removal of additions without particular historical or artistic value, and which do not add to the stability or good preservation of the original portions.

6. Before commencing a work of restoration it is necessary to collect the written or figured particulars relating to the building, having regard to the assistance which may be afforded by a study of works of a similar character and age to that which it is proposed to restore; to study the materials and constructive and decorative methods employed in the building, and to re-constitute, by means of historical records and inquiries, the injuries inflicted on the building.

The graphic portion of the preliminary study founded on the results of the beforegoing researches should consist of making careful drawings of the structure and condition of the various portions of the building; of taking the necessary tests and plumbings; preserving a record of all the indications of constructive or decorative work, referring to photographs or engravings of such parts as are proposed to be altered; and preparing geometrical drawings of the works considered necessary, and the results to be arrived at, reserving power to make any alterations which may be found requisite in the course of carrying out the works.

When, for reasons of stability or the attainment of a special æsthetic result, it is desired to have recourse to the completion of any part of a building, care should be taken that when the work is finished, the essence, reason and scope of the renovation should be apparent With this object, while employing materials similar to or allied to the original materials, a simplified workmanship should be adopted in harmony with the general effect, so that there may be no uncertainty as to the extent of the work of renovation.

It is permissible to demolish or remove any addition to a building in order to open out any important part of the structure or original decoration, provided the general effect of the building is enhanced thereby, and that such demolition does not result in the further exposure of the mutilations and disfigurement to which the hulding has been subjected. Before commencing any work of a similar nature, it should be ascertained as accurately as possible what are the essential characteristics, and the state of preservation of the original portions of the building, in order to avoid uncertainty, surprises, difficulties and unforeseen expenditure during the progress of the works. When the portions removed have any artistic or historical importance, they should be preserved in a place apart, or the fragments of the greatest interest collected, and drawn or photographed as a whole.

10. In every restoration which extends to the subterranean part of a building of a monumental character there will occur:—1. The of a building of a monumental character there will occur:—1. The opportunity of tracing the remains of any edifices anterior to the building to be restored, or the remains of other original arrangements of the same building. 2. The necessity of taking account of the most minute peculiarities of the fragmentary material obtained by means of excavation, especially with regard to its position or accidental deposit, from which it is often possible to deduce an excavation of the original plan of the building.

indication of the original plan of the building.

11. This special attention to the material obtained by excavation should extend to material resulting from pulling down, among which

may be found portions which may be made use of in the work of restoration, or may be usefully preserved on account of the indications presented with regard to the original arrangement of the building. These decayed artistic or scientific materials, together with any fragments which may be found in the vicinity of the building, which can be identified as undoubtedly belonging to it, should be servilly callected in view of the possibility of their being request.

be carefully collected in view of the possibility of their being re-used, or from their interest in connection with the building.

12. Whenever it is found necessary to remove the coloring or limewhiting which conceals any monumental portions of a building, it is before all things necessary to ascertain if there are any traces of decession underneath, which are interesting from an historical or of decoration underneath which are interesting from an historical or artistic point-of-view, and if such be found, to proceed with caution, so as not to injure the structure of the edifice nor the original surface, avoiding the use of metal tools, and using solvent or corrosive agents only when it has been ascertained that the ancient material, having regard at the same time to the damaged condition in which it may be found, will not suffer injury. Any work for the completion of wall-decoration with paintings considered of historical or artistic importance shall be carried out by a special expert under the particular instructions of the Minister.

When it is proposed to strengthen a building by iron ties, care should be taken that the architectural lines and the picturesque effect of the building are not injured, and in no case should the original building be altered with a view to concealing, in whole or in part, such subsidiary portions of the building. Care should be taken to obviate, by the exercise of timely caution, the injury which may be occasioned by the oxidization and consequent swelling of iron ties, and in all cases where the original building is of costly material or delicate workmanship, the use of copper should be pre-

ferred for the purpose.

14. The patching of decorative or ornamental features made with the single object of concealing marks of natural decay in the material employed in a building should be avoided, inasmuch as such operation involves the destruction of some original portions; and the chisel-work necessary to prepare the cavity for the patch may, in many instances, jeopardize or decrease the harmony (consistenza) of the adjacent parts. It is also to be remarked how rarely the operation of patching (tassellatura) sensibly improves the sethetic effect. Alterations occasioned by atmospheric influence or accidental damage when not affecting the stability of a building should be

damage when not affecting the stability of a building should be respected. Where the damage is so extensive as to threaten the stability of other portions of a building, partial rebuilding should be adopted with the precautions recommended in the preceding articles.

15. When it is found necessary to repair the roof-covering of a building, every trace of the original mode of covering should be preserved and displayed, and the original system followed as far as possible. Where the original form of roof-covering cannot be restored, a system should be adopted differing as little as possible from the original, and in no case altering the effect of the whole in from the original, and in no case altering the effect of the whole in

the least degree.

16. Special care should be taken in respect to the regular and safe removal of water by means of arrangements which sistent with the original condition of any building, preserving always any traces of previous arrangements for that purpose, even when

they may have become unserviceable, or are not adapted for re-use.

17. When a building which has been injured by frost or rain is to be repaired, and it is found necessary to use a special roof-covering, whether temporary or permanent, care should be taken, in carrying out the work, that the general effect of the building may not be sacrificed thereby.

18. All works relating to stained-glass of an historical or artistic

10. All works relating to stained-glass of an instorical or artistic interest should be executed under the personal direction of an expert acting under rules laid down by the Minister.

19. Works for the restoration of pavements of particular importance, whether as regards the value of the material or the fineness of the workmanship, should be undertaken with no other object than the better preservation of the material and its original arrangement. the better preservation of the material and its original arrangement. Recourse should be had to the renovation of original portions only when cavaties are disclosed which may become dangerous, or which may promote or accelerate the destruction of adjacent parts. The portions re-laid should be constructed of materials differing from the original, in order that the extent of the ancient pavement may be made evident.

20. Decorations of an historical or artistic interest, such as in-

scriptions, ledger stones, etc., should not be removed unless with the

object of preserving them from possible injury.
21. Shoring should be executed of materials sufficiently strong for the time necessary for the execution of the works of restoration. It is recommended from considerations of economy that brickwork or other permanent materials should be used whenever it is probable

that the work will last so long a time as not to justify the use of timber.

22. Provision should be made to free buildings from any vegetation which may constitute a direct cause of deterioration; this operation should, however, only be resorted to when its efficacy compensates for the risk of injury which may be occasioned to the

building by its frequent repetition.

23. Care should be taken to prevent the improper use of placards which conceal the important portions of a building, or which injure the artistic or picturesque appearance of the same, and similar placards already in existence should be removed when opportunity

offers.

¹ Translated by John Hebb in The Architect.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

STAIRCASE HALL IN THE HOUSE OF EDGAR HARDING, ESQ., WOOD'S HOLE, MASS. MR. H. M. STEPHENSON, ARCHITECT,

[Gelatine Print issued with the International and Imperial Editions only.]

FITCHBURG HIGH-SCHOOL BUILDING. MR. H. M. FRANCIS, ARCHI-TECT, FITCHBURG, MASS.

IZE of building: 220' long, 108' deep at centre, 80' at ends and 68' high, to cornice at centre. The exterior, which is practically completed, is laid up with yellow brick with terra-cotta trimmings; basement and porches are Berea sandstone; sub-basement, Fitchburg granite. The cornice is copper, and roof is slated. Inside finish is quartered oak and brown ash. The first floor is of "metalloid": stairs are iron. Building is plastered with Windsor cement. There are about 40 rooms, including a hall, seating with gallery about 1,200 persons. The drawing-rooms and chemical laboratories are on the fourth floor; physical laboratories on third floor; assembly-hall, library and principal's room on second floor; and gymnasium, locker and toilet rooms, etc., on first, or basement floor. The boilers, heating-coils and fan are in the sub-basement. The contractor is J. R. Hosmer of Fitchburg, associated with Hascal Dodge of Springfield. The price, \$112,100, does not include the heating and ventilation, which is in charge of Prof. S. H. Woodbridge of Boston, nor the electric-wiring, gas or electric fixtures, fittings or furnishings of any rooms. The total cost will be about \$165,000. \$165,000.

HOUSE AT. YONKERS, N. Y. MESSRS. PARISH & SCHROEDER, AR-CHITECTS, NEW YORK, N. Y.

THE house is designed for a suburban street-lot of fifty feet The exterior, as represented, is to be covered up to the second width. width. The exterior, as represented, is to be covered up to the second floor with shingles, the remainder to be half-timber work and stucco, stippled. The stucco to be applied to plaster boards, fastened to the sheathing. The roof to be covered with cypress shingles, left to weather. The interior to be finished, in the hall, parlor and diningroom in oak throughout. The remainder of the house to be finished in whitewood, to be painted. The plumbing to be of the latest improvement, with all the pipes exposed. The preliminary estimate for the masonry, carpentry, painting, plumbing and hot-water heating amounts to \$6,435.

BURLINGAME COUNTRY-CLUB STABLE, BURLINGAME, CAL. MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL.

THE stable has a frontage of 141' with a depth of 110', enclosed on four sides. Stable provides stabling for eighty horses, polo ponies, etc., ample carriage-rooms, men's quarters, etc. The exterior of the building is finished entirely in plaster and hardwood. The roof is covered with cedar shingles. An enormous oak tree in the centre of the court forms a pleasant feature, with seats arranged about same. The court-yard is filled with broken shells.

COLONIAL WORK AT NEWPORT, R. I.: 1WO DOORWAYS. MEASURED AND DRAWN BY MR. P. G. GULBRANSON.

STABLE AT WYCKOFF, N. J. MR. E. G. W. DIETRICH, ARCHITECT, NEW YORK, N. Y.

DESIGN FOR A STABLE. MR. E. G. W. DIETRICH, ARCHITECT, 1 NEW YORK, N. Y.

HIGH-SCHOOL BUILDING, MEDFORD, MASS. MESSRS. HARTWELL & RICHARDSON, ARCHITECTS, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

BETHLEHEM PRESBYTERIAN CHURCH, BROAD ST., PHILADELPHIA, PA. MR. T. P. CHANDLER, JR., ARCHITECT, PHILADELPHIA, PA. [Gelatine Print.]

A SHOP-FRONT MARQUISE, RUE DU PONT NEUF, PARIS, FRANCE. M. F. JOURDAIN, ARCHITECT, PARIS, FRANCE.

This plate is copied from La Construction Moderne.

THE FONTANA DEL CORPO DI GUARDIA, RAGUSA, ITALY. This plate is copied from Architektonische Rundschau.

HOUSES AND DETAILS OF THE SAME AT OSNABRÜCK, PRUSSIA. THESE plates are copied from the Zeitschrift für Bauwesen.

APARTMENT-HOUSE, STOCKHOLM, SWEDEN.

THIS plate is copied from Teknisk Tidskrift.

NEW CATHEDRAL HIGH-SCHOOL FOR BOYS, ESPLANADE, BOMBAY, INDIA.

This building is to be erected on a site east of the General Mews on the Esplanade. The building is from designs and estimates prepared by Mr. John Adams, Architectural Executive Engineer and Surveyor to Government. The extreme length of the main building is 156' 9" and breadth including the wing on the South side is 111' 0". The total height of the building from ground to underside of the tiebeam is 58' 6". The ground-floor affords accommodation as follows: three class-rooms, each 24' x 21'; one school-room, 65' x 24'; boys' refectory, 30' x 24', as also day-teachers' rooms, dispensary and godown. A corridor 8' in width runs around the building in front and rear of the main rooms. The first floor contains a chapel, three class-rooms, an office and library with quarters for the headmaster, and rear of the main rooms. The first floor contains a chapel, three class-rooms, an office and library with quarters for the headmaster, consisting of drawing, dining and two bed-rooms and bath-rooms. On the second floor there are two dormitories, affording accommodation for forty-four beds. In the corridors attached to the dormitories there are six bath-rooms for small boys. There are also provided to the bath-rooms for small boys. vided two bed-rooms for masters, and a room for the matron with bath-rooms. Connected with the main building by covered ways are two blocks, one to accommodate servants and the kitchen, and the other for baths, water-closets, etc., for boys. The estimated cost of the building is 175,994 rupees. The plate is copied from Indian Engineering.

NEW CONSERVATIVE CLUB-HOUSE, GLASGOW, SCOTLAND. MR. R. W. EDIS, ARCHITECT.

This plate is copied from The Builder.

SCHOOL-BOARD OFFICES, SALFORD, ENG. MESSRS. WOODHOUSE & WILLOUGHBY, ARCHITECTS.

This plate is copied from the Building News.

VICTORIA INSTITUTE, WORCESTER, ENG.: ENTRANCE TO LIBRARY BLOCK. MESSRS. J. W. SIMPSON & E. J. MILNER ALLEN, AR-

VICTORIA INSTITUTE, WORCESTER, ENG.: THE LIBRARY BLOCK. MESSRS. J. W. SIMPSON & E. J. MILNER ALLEN, ARCHITECTS.

VICTORIA INSTITUTE, WORCESTER, ENG.: THE SCHOOLS' BLOCK. MESSRS. J. W. SIMPSON & E. J. MILNER ALLEN, ARCHITECTS.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE DRY-CLOSET SYSTEMS.

NEW YORK, N. Y, November 3, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT: -

Dear Sirs, - I have just read X. Y.'s communication about the Smead system of closets in school-houses.

I do not know who X. Y. is, but it is quite evident he does not know that when there is not great heat in the stack-heater, or in vacation, or in warm, most weather, provision is made to maintain the required circulation in the stack-heater in a satisfactory manner.

I built a large school-house on the banks of the Hudson River several years past and used this Smead system. Just when the fires were not going and when there were no children in school, I went down into the dung vaults and I found that the excrement was dried and the circulation of air was from the foul-air chamber towards the

Of course, if parsimonious School Boards are to allow a "shortage of fuel" or will not use the "auxiliary heater," it is quite evident human ingenuity is handicapped.

If, however, the engineering requirements are strictly carried out by the architect without reference to well-meaning busy bodies, who do more harm than good, I feel that such carping criticism as I have just read will have no foundation in fact

GEORGE MARTIN HUSS, Architect. Yours faithfully,

THE REPORT OF THE COMMITTEE ON EDUCATION.

KANSAS CITY, Mo., November 2, 1894.

To the Editors of the American Architect:-

Dear Sirs, - In your report of the third day's session of the Convention of the Institute in New York, the following paragraph occurs: (American Architect, No. 983, p. 36).

"Mr. Van Brunt took the floor to explain that the report of the

Committee on Education was really nothing but an inquiry as to

the causes of the disorderly results of architectural education in this country as evidenced in executed work, and that it was in no sense intended to be a reflection upon the schools or on those who conducted them. He emphasized his point by stating his belief that should a dozen architects be called on at the same time to design each one a separate building in the same block, no one of them would think of consulting with his fellows with the intention of securing for the block as a whole a proper architectural effect."

What I really did say — and the point of difference is very essential — was, in substance, that should a dozen modern architects of thorough training in the best schools be called upon separately, each one without knowledge of the other, to design adjoining buildings in the same block, the result would be, not the unity in variety, not the unconscious harmony of pure style, as in any sixteenth-century street in North Italy or France, but a more or less turbulent disagreement.

By this I did not mean the vulgar intentional discord of professional rivalry, but the inevitable confusion of tongues, the almost necessary conflict of irreconcilable formulas, brought about by our

present methods of using historical precedents.

The fact that this confusion and conflict exist cannot be questioned; and every thinking mind will admit that it is significant of something wanting in the architecture of the end of the nineteenth century— an architecture, which, as it is the most learned and the most con scious the world has ever known, should at least have the sanity of system. Apparently, however, the Institute is not as yet prepared to consider seriously this important, though, perhaps, somewhat abstract question, and he who attempts to draw attention to it and to make inquiries as to a possible remedy must, until the fulness of time, run the usual risk of being considered an impracticable dreamer or crank, and must patiently endure the usual demonstrations of conservative condescension.

Henry Van Brunt.



OSTON, MASS. — Exhibition of the Works of Adolf Menzel; also, Drawings by John Trumbull: at the Museum of Fine Arts, in October and BOSTON, MASS. November.

Water-colors by Childe Hassam: at Doll & Richards, 2 Park St., closes November 14.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.

ana Scupture: at the Art Institute, October 29 to December 17.

New York, N. Y.—Loan Exhibition of Portraits of Women: at the National Academy of Design, November 1 to 24.

Loan Exhibition: at the Metropolitan Museum of Art, New North Wing, opened November 5.

Ehrich Collection of Old Masters: also, Group Exhibition by American Painters—William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street. Tschille Collection of Arms and Armor: at Tiffany & Co.'s, Union

PHILADELPHIA, PA. - Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 6.

PROVIDENCE, R. I. - Paintings by Providence Artists: at the Art Club, closes November 10.



The Metamorphoses of a Bust. — English sculptors are not half up to date — perhaps because our fewer political changes have not sharpened their wits. The Parisians just now are laughing at the vicissitudes of a bust of Louis XIV over the colonnade on the east side of the Louvre — When Perrault erected the colonnade, the bust was an exact likeness of the "Roi Soleil," but under the First Empire the official sculptor chipped off the flowing wig, and pared the nose down to the Napoleonic proportions. When the Bourbons came back, the wig was replaced, and the necessary hump put on the nose, but both were removed during the Hundred Days. But after Waterloo, the perruque and the aquiline nose were restored, and the troubled bust had rest, though now that the subject has been raised, possibly M. Casimir Perier may wish to add his moustache to the long-suffering work of art. — Building News.

How shall one House discorde the Other. — A very peculiar case is reported from Frankton, a small village west of this city, in Madison County. The subject of the story is Henry Over, aged about fifty-five years. He is an upholsterer by trade, but for thirty years past has been engaged in building a new house. He resides in a small two-room house in the centre of the city. Soon after the war, Henry had a good bundle of money, and decided that he would build a larger house. He wanted to locate it where the old one stood, but did not care to go to the expense of moving it. The new building was to be larger, and he decided to leave the cottage standing and build the other one around it. In the meantime, he would have some place to live. The foundation was placed in, and work began as above stated. He decided that he would do the work alone. Since then, he has kept

pecking away with his hammer and saw, and the house is not yet completed. As it now stands, a part of the roof is on, and nearly all of the weather-boarding up, but some of it is so badly spoiled from exposure, that it will soon have to be replaced. When the work of roofing the structure was begun two years ago, it was found that the sills placed on the big boulder-foundations, back in the sixties, had become so badly decayed that new ones had to be placed in. The work is now being delayed by the old gentleman while he contrives some idea how to get the old building out of the new one without tearing it to pieces. He says the present trouble could have been averted had he been familiar with the "new-fangled" idea of moving houses on rollers. — Cincinnati Commercial-Gazette. Commercial Gazette

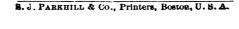
"Cochon." - A rather curious and unusual case of building A "Cochon." — A rather curious and unusual case of building rights is attracting considerable attention at Paris at this moment. No. 88 of the Rue des Martyrs, a well-known street leading up the hill of the church of the Sacré Cœur, comprises two large houses having the same staircase and entrance. One of these houses is the property of a Madame Vincent, the other has lately been bought by a M. Bonnard, who stipulated when buying that he would pay no ancient rights. The new proprietor, as soon as the sale was proved, forbade the inhabitants of the adjoining house the use of the staircase. The case was taken before the law-courts, where it was decided that M. Bonnard had a perfect right to erect a barrier between his house and that of his was taken before the law-courts, where it was decided that M. Bonnard had a perfect right to erect a barrier between his house and that of his neighbor. After a short lapse of time, the new landlord, acting on the decision given in his favor, ordered the passages acceding to the staircase from his neighbor's house, and those leading to the water-closets, to be walled up, thus imprisoning the tenants in their apartments. These latter are now obliged to leave their rooms by means of ladders in order to descend to the street, and haul up all their provisions by means of ropes from their windows, a position scarcely convenient for the tenants, but highly amusing to the passersby and neighbors. This state of things, it is hoped, will not last, however, for several of the councilors of Montmartre are taking the matter in hand, in order either to arrange an amicable understanding between the joint proprietors of to arrange an amicable understanding between the joint proprietors of the staircase, or make an appeal to law. — Paris Letter in the Builder.

JEWISH LEGEND ABOUT SOLOMON'S TEMPLE.— The Jews have a legend to the effect that Solomon did not employ men in building the great "House of the Lord," but that he was aided in the gigantic undertaking by the genii. Having a premonition that he would not live to see the building finished, Solomon prayed to God that his death might be concealed from the genii until the structure was finished. Immediately after, he made a staff from a sprout of the tree of-life, which was growing in his garden, and, leaning upon this, he died. Immediately after, he made a staff from a sprout of the tree of-life, which was growing in his garden, and, leaning upon this, he died, standing bolt upright in the unfinished temple. Those who saw him thought that he was absorbed in prayer, and they did not disturb him for upward of a whole year. Still the genii worked day and night, thinking that they were being constantly watched by him whose eyes had been closed in death many weeks. All this time, so the legend says, little white ants (one account says red mice) were gnawing at the staff, and, when the temple was finally finished, the staff gave way, and the body of the dead Solomon fell prone upon the floor. Mohammet alludes to this queer legend in the Koran, where he says: "When He (God) had decreed that Solomon should die, nothing discovered his death unto them (the genii) except the creeping things of the earth."—
Philadelphia Press.

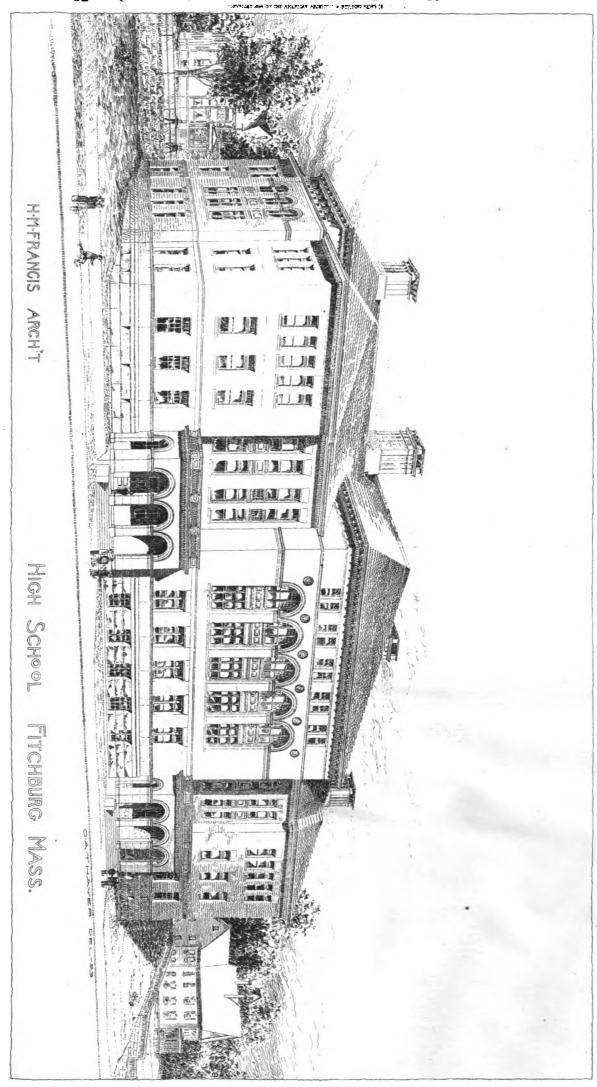
AN ALL-IRON RAILROAD IN ASIATIC TURKEY. - One of the curios-AN ALL-TRON RAILROAD IN ASIATIC TURKEY. — One of the curiosities of railroad building is the construction of a road running from Ismid, a harbor about sixty miles from Constantinople, to Angora, about three hundred miles. The bridges, sleepers, stringpieces and telegraph poles, as well as the rails, are of iron, nine-tenths of which are of German manufacture. The bridges average about four to the mile, there being 1 200 of them, the longest having a stretch of 500 feet. In addition to these there are sixteen tunnels, the longest measuring 1,430 feet. This is the only railroad which penetrates the interior of Asiatic Turkey, the Smyrna lines being near the coast — N. Y. Tribune.

Paris and the Smoke Nusance.—The Corporations of Paris are, it is announced, prepared to receive, until November 1, detailed designs for the suppression of the smoke nuisance, the prizes being 10,000, 5,000 and 2,000 francs. A similar competition has been determined upon for the purification of the River Seine. Tests are to be made by a specially-appointed commission and that result will be considered most successful which gives a clear, colorless water without disagreeable taste and free from microbes of a character dangerous to health. The prizes vary from 1,000 to 3,000 francs. The designs or details of existing systems were to be sent in before September 15.—Invention.

White Cadiz.— Every traveller is astonished at the excessive whiteness of Cadiz. The streets might be cut out of shining marble, and are all decorated with bright-green jalousies and balconies. Of such an immaculateness are the pavements, that you could dine off them without a tablecloth. Of a prettiness so dainty and regular, that you weary of it before the first day is over, for each street is like another street, and there is no escaping the contrast of white and green. Night decorates it with some variety—everybody is abroad; streets, squares, alamedas, and gleaming café-fronts are all alive with the hum of humanity. You are enticed along by the smiles and lovely allurements of the maidens and matrons, with their exquisite walk, their mantillas, and their long-fringed shawls. You are kept amused by the viracity and volubility of the men. Here, at least, the guitar twangs and the mantilla is still worn, sometimes, even, with the traditional rose; and often a dark-eyed nymph passes with her slight Andalusian swagger and its message of charming provocation, flaunting a rose between her lips. But only sometimes, alas! The fashions of Paris have encroached so far, and the ladies of Cadiz are not unacquainted with a passion for the shoddier articles of England. — Good Words.

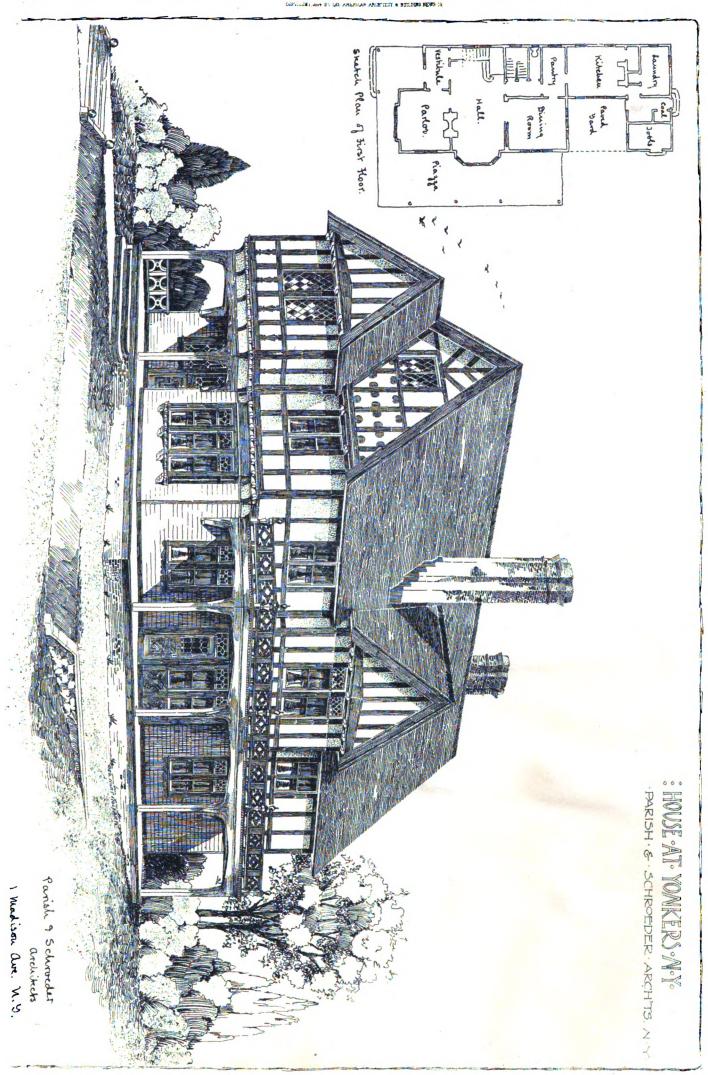


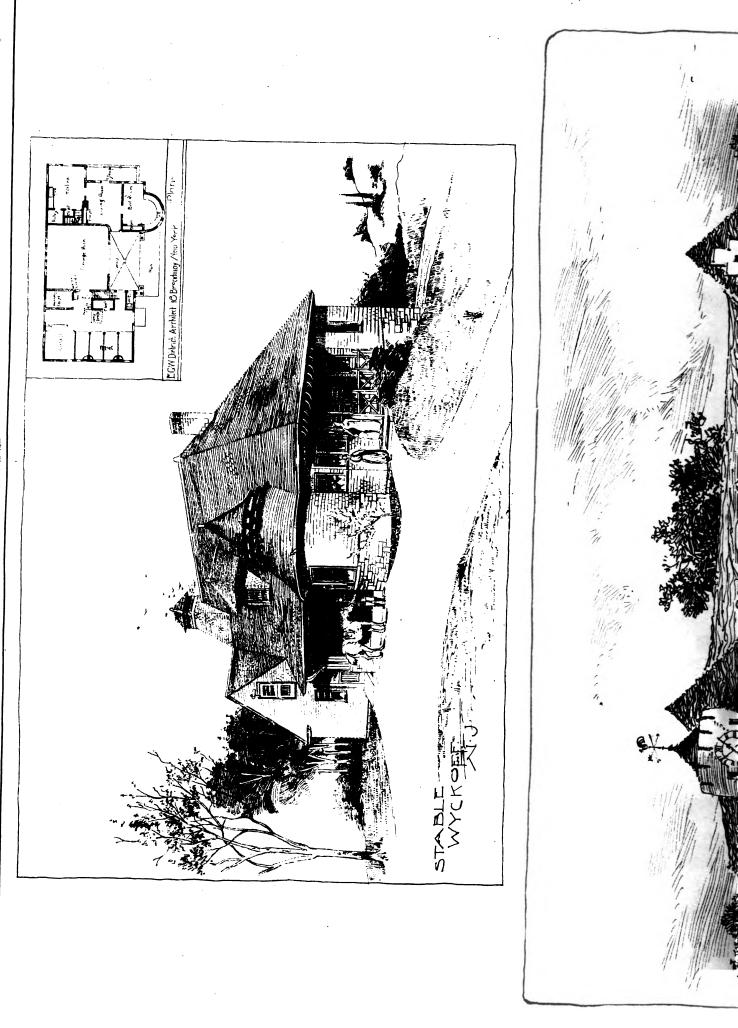
PO. 985. American Architect and Building News. 120v.10 1894.

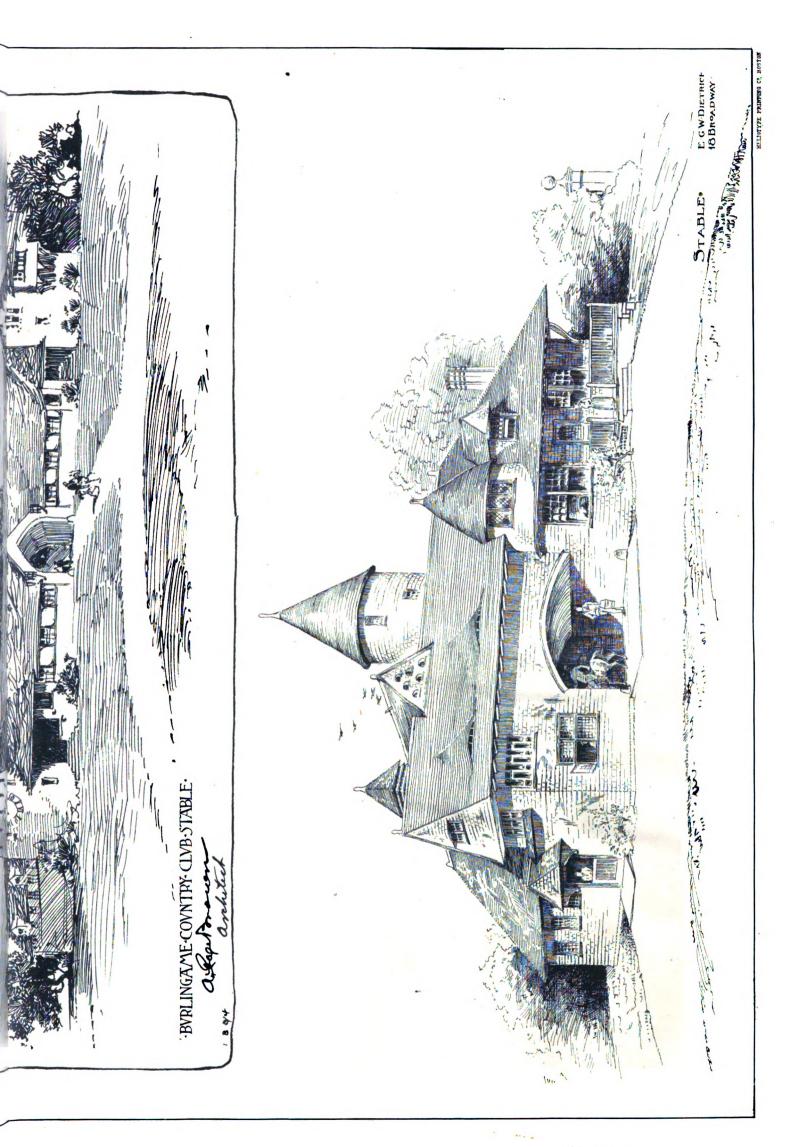


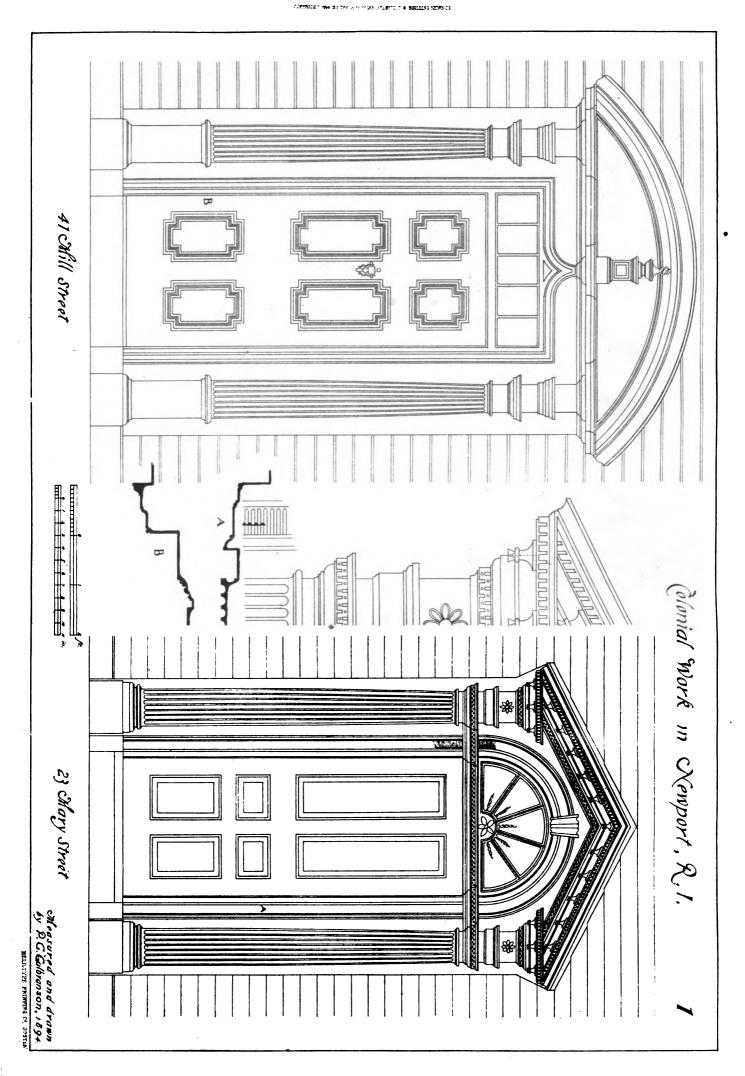
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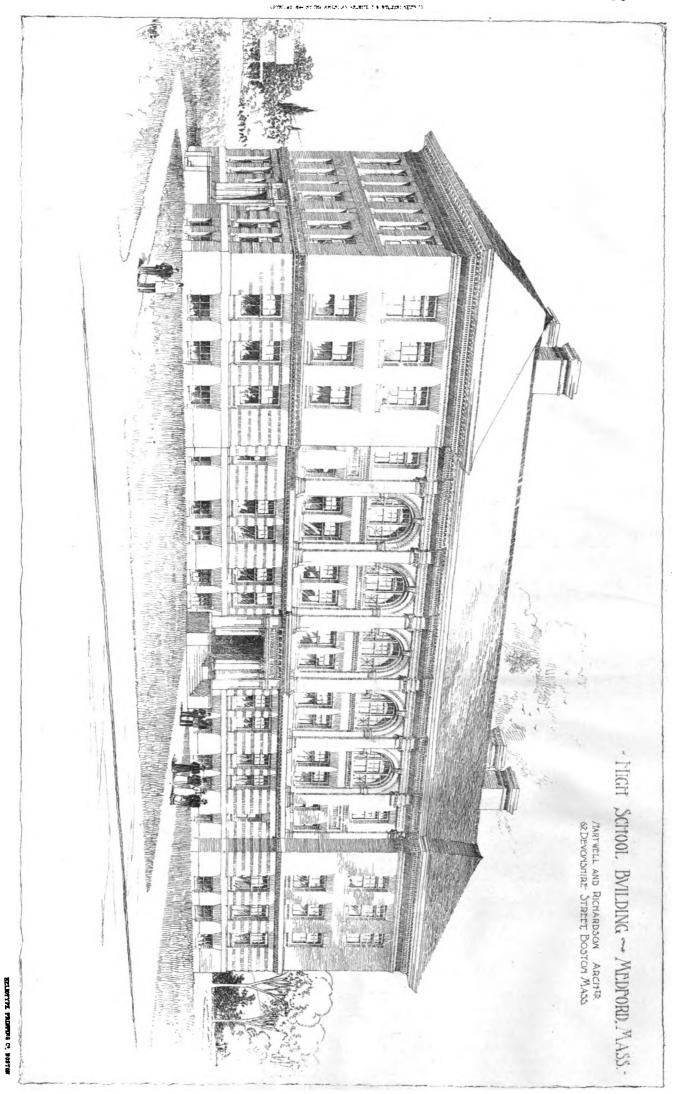
P.O. 985. AMERICAN ARCHITECT AND BUILDING NEWS. 120v.10. 1894.











Entered at the Post-Office at Boston as second-class matter.

NOVEMBER 17, 1894.



Formation of a Municipal Art League in Philadelphia. —
Death of Philip Gilbert Hamerton, Author. — Hamerton as an Etcher. — Mr. Hastings's Paper on High Buildings. —
Mr. Olmsted and the Harlem Speedway. — Proposed Saltwater System for Fire - service in Boston. — Copies of Ghiberti's Bronze Doors to go to the Metropolitan Museum. — Professor Dörpfeld's Excavations at Hissarlik.

HIGH BUILDINGS AND GOOD ARCHITECTURE.

PROFESSIONAL ETHICS.
THE "UNIFICATION" OF LONDON.

NOTES ON THE EARLY CHRISTIAN MONUMENTS OF CORNWALL.
LETTER FROM CANADA.

MODERN PORTRAITURE IN LONDON. Formation of a Municipal Art League in Philadelphia. 68 69 Modern Portraiture in London. BOOKS AND PAPERS. . SOCIETIES . House of Dr. Harte, 1503 Spruce St., Philadelphia, Pa. Touse of Dr. Harte, 1503 Spruce St., Philadelphia, Pa. — Swedenborgian Chapel at San Francisco, Cal. — Main Entrance to Power-station of the Washington and Georgetown Railway, Washington, D. C. — Office-building at Houston, Tex. — House at Niagara Falls, N. Y. — House for W. C. Sturgis, Esq. — House at San Antonio, Tex. — House at San Antonio, Tex. — Main and the House of E. F. Searles, Esq., Great Barrington, Mass. — Pavilion of the American Bell Telephone Co., World's Columbian Exhibition, Chicago, Lt. — A Shop-front, Prince's St., Edinburgh, Scotland. — New Police Barrack, Chapelizod Co., Dublin, Ireland. — The Portland Arms Tavern, 60 High St., St. John's Wood, London, Eng. don, Eng. . . Communication: —

THE example of the New York Municipal Art League, which has already led to the formation of a similar body in Boston, has not been lost on Philadelphia; and, a few days ago, committees, representing the Pennsylvania Museum, the Drexel Institute, the School of Design for Women, the Philadelphia Art Club, the Spring Garden Institute, and the Department of Architecture of the University of Pennsylvania, met for the purpose of appointing a general committee, to confer with the Public Building Commission on the subject of the mural decorations of the Council Chambers in the new Philadelphia City-hall, or, as the Philadelphians prefer to call it, the Public Building. Whether this means that the general committee is to try to raise funds to pay for good decoration in the Council Chambers, or is only called in to advise the Commission as to the best way of obtaining such decoration, we are not informed; but, in either case, it is satisfactory to reflect that, in the matter of adorning the most important rooms in the most important building in Philadelphia, the citizens who know most about the matter are to be consulted. As we have often said, it is in this way that public interest in matters of art can be best awakened, and the powers of our artists stimulated by emulation; and, crude as our public architecture and public art, taken on an average, now are, we look forward to the time when, through the efforts of Municipal Art Leagues, Art Committees and so on, each one of our cities, large and small, will boast its masterpieces, and when the rivalry between the Philadelphia and the Chicago schools of painting, or the Boston and Cincinnati types of architecture, or the Baltimore high-relief sculpture and the St. Louis low-relief, will be as keen as that between the great schools of painting in the six-teenth century in Italy. Nor, as we believe, is that time very far off. Although the patient American public has for many years been content to accept as "art" such rubbish as would turn the stomach of a Frenchman or an Italian, it is rapidly learning better; and, as we know, it is never satisfied without the best that it can comprehend; while the powers of American artists have been developed quite as rapidly as the public appreciation of them. There are few departments of art in which it cannot be truly said that the best work done in America is as good as is done anywhere; and, by seeking and encouraging the best in our art, as the new Municipal Leagues propose to do, they will train the public and the artists together.

HE world of art has lost one of its most sensible and intelligent counsellors in the death of the local Hamerton, the editor of the Portfolio, author of a considerable number of beautiful and instructive books, and an artist of no mean rank, who passed away suddenly at his home at Boulogne-sur-Seine a few days ago. Mr. Hamerton was born in England, at Laneside, Lancashire, in 1831. He was prepared for the University, but his activity, and love of literature and art, led him into so much occupation that he never found time to take his matriculation. In 1855 appeared his first important work, a volume of poems, illustrated by himself. After the publication of this book, he went to Paris, to study painting; and, in 1857, an account of one of his artistic experiments was published, under the title of "A Painter's Camp." Returning to France, he married, and, although he was often in England, and held an important place in English literature, his home thenceforth was in France. Unquestionably, the intimate knowledge which he possessed of the two countries was an advantage to the readers of his books, and, still more, of his magazine, the Portfolio, which he projected and edited to the close of his life. In nothing are the English more insular, and the French more Gallic, than in their ideas of art; and Hamerton's cool knowledge, which no Parisian fashions could pervert, translated the best and truest part of French art, as of French character, into language which his English readers could appreciate. Of late years, his reputation as a writer has rather obscured the fame which he won as an artist during the earlier part of his residence in France; but the more elderly among lovers of art will well remember that his beautiful volume of etchings, the "Voyage on an Unknown River," once placed him high among the rising stars of the artistic world.

As an etcher, Hamerton may almost be said to have founded a school. Although his style of etching was certainly based on the modern French method, he developed it with a taste and discretion which made it his own; and many a good etcher of the present day owes more than he thinks to Hamerton's example. He added, however, precept to example; and his book on "Etching and Etchers" is perhaps his bestknown work. His observations of French life and ways, apart from questions of art, are extremely interesting, and form the subject of more than one of his books; and one of the more recent ones, on "The Saône," illustrated jointly by himself and Joseph Pennell, who accompanied him on a vacation voyage, is one of the most charming books in every way that we know.

EELING that in our report of one of the sessions of the recent Convention of the American Institute of Architects, we had given an altogether too brief, imperfect and summary condensation of his paper on the artistic treatment of high building, Mr. Hastings has asked us to publish his paper in full. The paper will be found elsewhere in this issue and will be read with interest. We can only hope that readers will find, that crude and imperfect as our synopsis was, it was not altogether unjustifiable or unfair.

R. FREDERICK LAW OLMSTED has been appointed landscape architect of the Harlem Speedway in New York, and the city may thus be adorned with another of the beautiful works of one of the greatest artists of our time. The speedway does not present a particularly favorable field for landscape gardening; but some of Mr. Olmsted's best work has been done on the most unpromising subjects; and it is much to be hoped that, after the affair is completed, it may be left to develop its beauties as its designer intended, without the manglings and alterations to which some of his work has been exposed. It is not at present known whether Mr. Olmsted can be induced to accept the appointment.

SCHEME is on foot in Boston for laying a system of firemains, to bring salt-water from the harbor to the business part of the city, and to provide steam-pumps for keeping the water in the mains under sufficient pressure to carry it directly from the hydrants to the top of the highest buildings, without the intervention of the ordinary fire-engines, which are frequently delayed by the crowded condition of the streets. The plan was originally proposed by the Fire Commissioners

and has the warm approval of the most distinguished fire engineers of the city, and has now been taken up by the merchants, who have sent in a formidable petition in favor of it. Boston, being, so to speak, a modern city scattered through an ancient one, presents peculiar difficulties to firemen. now, masses of wooden buildings lie concealed behind the costly structures of the present day, with their millions of dollars' worth of valuable contents, and constantly threaten them with destruction. According to the insurance maps, more than half the built-over area of the most important business part of the city is, if we are not mistaken, covered with wooden structures. The building-law cannot touch them, so long, as they are not altered, and they remain a continual menace to Boston prop-Unless some such radical measure is taken as that proposed for Glasgow, where the draft of the new building-law has a provision requiring all the buildings in the city to be brought into conformity with it within some years, Boston is likely to suffer for centuries to come from a condition which has already cost it millions and millions of dollars; and a good and quickly available water-supply, such as the new scheme proposes, will be the best palliative.

STORY is going about through the daily papers, in regard to certain bronze doors for the great Vanderbilt mansion in New York. According to the reporters' version of the tale, Mr Vanderbilt, when in Florence, was struck with the appearance of the doors on "the San Giovanni Baptistry," which were made by one "Lorenzo Gilbert," "more than four hundred years ago," and resolved to have a reproduction of them made for the entrance of his new house in New York. He was confirmed in this resolution by hearing that "Angelo" regarded "Gilbert" as "a master workman," and, still following the reporters' account, ordered forthwith, from "a bronzefirm" in Paris, duplicates of Signor Gilbert's work. contract price agreed upon is said to have been one hundred and twenty-five thousand dollars. The doors, we are informed, were duly completed and delivered, and the contract price paid. When they arrived at their destination, Mr. Vanderbilt and his family were shocked to find that there was "too much gilt daubed on the panels." As the real Baptistry doors were probably, when they left their author's hands, as brilliant with gilding as Ghiberti, "the goldsmith," could make them, it must have been a critical taste which could have discovered an excess of gold on the panels of the imitation; but, however that may be, it was decided, as we are told, to have the gilding scraped off. It would seem as if a vigorous application of sand-paper and wire brushes might have reduced the "gaudi to an inoffensive point; but Mr. Vanderbilt, it appears, ness thought best to send the doors to a New York "art foundry, to have the gold thoroughly removed. For this purpose it was necessary to take off the panels; and, to the horror of the local sculptors, "art-workers," bronze-founders and others, it was discovered that the sculptured part of the doors was of "thin metal," screwed to "a common wooden frame." Mr. Vanderbilt, we are assured, was "astounded" at this discovery, and wrote to the Parisian "bronze-firm" about it. The "bronze-firm" replied that doors of solid bronze were unheardof in France, and that they had not agreed to furnish anything of the kind; and Mr. Vanderbilt, with the remark that he "would not permit the doors to be placed in position in his mansion," ordered new ones, of solid metal, to be made for him by the enterprising establishment to which had been confided the scraping-off of the gilding from the "fake doors" of the French firm. Meanwhile, the wretched objects whose fraudulent character had been thus fortunately unveiled appear to be the target of the just indignation of all those who would have liked the contract themselves; and, while Mr. Vanderbilt has not actually thrown them away, it is reported that he intends presenting them to the Metropolitan Museum of Art, where, as representing a famous work of Italian art, it is hoped that they "may be of service."

THERE is something shocking in the idea of connecting all this ignorant scandal with the ineffable beauty and nobility of what is certainly the greatest work of applied relief decoration in the world; and it is only fair to say that we believe very little of the part of the story which relates to Mr. Vanderbilt, who has quite enough taste and feeling to appreciate good sculpture of the kind, and who, it may be observed, is not in the habit of presenting to the Metropolitan Museum

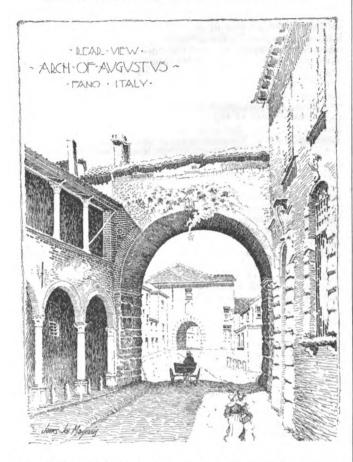
cast-off objects which he does not think good enough for himself. So far as the Museum is concerned, it may well be pleased at the prospect of possessing a copy, by good French hands, of the immortal work of the Florentine goldsmith, and, while we regret that the "gaudy gilding" should have been scraped off, we commend the doors, whenever Mr. Vanderbilt's intention shall have been carried out, to the attention of all students and lovers of art who may visit the Museum.

THE German Reichs-Anzeiger gives a short account of the excavations at Hissarlik, which, after the death of Dr. Schliemann, were taken up by Dr. Dörpfeld, and are now completed for the present. It will be remembered that Dr. Schliemann found the hill of Hissarlik to be covered with several strata of débris, differing widely in character, and indicating that it had been occupied by various colonies of people, not, as a rule, nearly related to each other, who had, apparently, been successively driven out, and their places, after an interval, in which such buildings as survived the destructive fury of the conquerors had succumbed to natural decay, filled by new settlers. In fact, the appearance of the ruins gave some clue to the manner in which each colony had perished, one stratum of débris being so mixed with fragments of charcoal as to show that a great conflagration had swept away the town; while others indicated natural decay.

PROFESSOR DÖRPFELD, taking up the work where Schliemann left it, ascertained that, above the virgin soil of the hill, there are nine distinct strata of débris. ninth, or upper stratum, is formed by the ruins of an important city of the time of the Roman Emperors. It will be remembered that the Julian family, to which the earlier Emperors belonged, traced its descent, through Iulus, to Æneas, the son of Anchises of Troy by the goddess Venus. They therefore regarded, or pretended to regard, Troy as their ancestral home; and it was by their favor that a considerable Roman town sprang up on the deserted hill of Hissarlik. Of this Roman town are still distinguishable the remains of a theatre, a forum, a temple and other buildings, and several inscribed marble slabs, found in the ruins, describe the hill as the Acropolis of the Roman city of Ilion. Beneath the marble of the Roman town are found two distinct strata of ruins of unimportant buildings, which, by the objects found in them, are clearly identified as belonging to Grecian settlements, one dating from the early Grecian period, anterior to 500 B. C. and the other from the later period, between 500 B. C. and the Christian era. The two Greek towns were probably quite distinct, one having been deserted for centuries before the second was built. The history of the Roman city and the two Greek villages extend over at least a thousand years, yet their remains constitute only three out of the nine strata of débris. Below the ruins of the earlier Greek town are found the imposing remains of an important fortified town, which may easonably be believed to have been the Troy of the Iliad. These ruins show marks of fire, which would indicate capture and destruction by a hostile army; but they are still in comparatively good preservation. Dr. Dörpfeld, with excellent judgment, instead of indulging a natural curiosity in the investigation of the more ancient remains below, has devoted himself to this stratum, and has revealed to us Homer's Troy in a tolerably perfect form. The walls surrounding the Pergamos, or citadel, the very walls around which Achilles dragged the body of Patroclus, still stand, the upper part of them only having been thrown down or carried off for building stone; and in strength, extent and perfection of workmanship they surpass almost anything of the kind in all antiquity. Naturally, the character of the work somewhat resembles that of Agamemnon's Mycenæ, but the skill of the Trojan stone-cutters is much superior to that shown in the buildings of Mycenæ or Tiryns. It is curious, also, that the angles of the Trojan wall, which forms a polygon, with perfectly straight sides, are decorated, as well as strengthened, by a narrow pilaster. Just inside the walls still stands the stonework of a sort of guard-house, or, possibly, of a fortified residence. The kitchen, with its fireplace and mill-stones, is still distinguishable, and in the débris lying on the floor were found various cooking utensils. Besides these, great numbers of fragments of pottery were found in excavating at this level, most of which belong to the well-known Trojan type, while some are plainly Mycenæan.

HIGH BUILDINGS AND GOOD ARCHITECTURE.

WHAT PRINCIPLES SHOULD GOVERN THEIR DESIGN.



HAVE been invited to speak upon the subject of lofty buildings, from an artist's point-of-view. I hesitated to accept, because in general I believe it is better to work than to talk about working. Work is so much more and higher than words. And yet a comparison of views among us, who are all workers, may be mutually helpful. There is but little to be said upon this subject which has been assigned me but I may hope at least to suggest a few things which assigned me, but I may hope, at least, to suggest a few things which will invite discussion.

I will not venture to discuss the propriety of erecting such high buildings, or the municipal laws that should limit their height, because that aspect of the question has been assigned to another; but I will only express my own personal convictions upon the

I believe that there should be rational limitations for all buildings constructed solely for revenue. This is required by practical and sanitary considerations. From an artistic point-of-view, my subject permits me to argue that there is nothing more unfortunate in the general aspect of a city than the necessarily broken sky-lines of our streets, because of there being no legal limitation as to the height of buildings. It is almost discouraging to spend one's energies upon fifty or one hundred feet of an avenue or street, when, however good the result in itself may be, we are only making a blot upon the ensemble of the general line of building. Legal limitations would give us that monotony so essential to the general appearance of a city, and also so essential as a background for exceptional monuments. In such a company as this, it is not necessary for me to do more than allude to the rigid building-laws existing in other countries than ours, in order to explain the charming unity and monotony which exist in the streets of the principal foreign cities.

Modern life and habits, modern inventions, the modern industrial and commercial spirit, perfected systems of lighting, ventilating and heating, the elevator and other practical conveniences, have of necessity imposed upon the architects of our time a new and serious prob-lem to solve. This problem must confront us, even if legal authorities lem to solve. This problem must confront us, even if legal authorities finally fix a limitation as to height or number of stories; for such a limitation can only simplify the problem, and not eliminate it. It must, therefore, be solved in an artistic way. To contend that this one problem, resulting from the industrial and commercial spirit of the age, must, as has so often been assumed, determine and transform the age, must, as has so often been assumed, determine and transform all modern architecture, is unquestionably an exaggeration. The architect of our time has practically the same civil, domestic and religious problems to solve, in their many and varied forms, which have been given his profession ever since Classic times. The variety of problems only increases as life expands and differentiates, as is noticeable when we study the history and development of architectural style. The mere theorist is apt to make too much of what he

¹ A paper read by Mr. Thomas Hastings, F. A. I. A., at the Twenty-eighth Annual Convention of the American Institute of Architects, October 16th, 1894.

calls an "entirely new state of affairs," and so becomes revolutionary in questions of design. The office-building is only one step farther in the general advancement. With the many difficulties

tarther in the general advancement. With the many difficulties before us, while endeavoring to design a lofty structure, we must not be discouraged, but only try to build in the most natural and logical way — adapting all precedents to this one new condition.

Before suggesting any solution of the problem, allow me to say it is both easy and permissible for me, as well as for all of us, to preach better than we have been able to practise; especially when such difficulties are before us as baffle all education and demand experience which involves failures. Therefore I have those of you who are ence which involves failures. Therefore, I beg those of you who are familiar with any work of this kind in which I have participated, not to allow what I have done to prejudice you against any suggestions

which I may be able to make concerning this matter.

It would seem as if nature had come forward to provide us with comparatively new materials, in iron and steel, to assist us in this new kind of work. That these materials should play a most important part in our designing, it seems to me must be accepted. Our building laws, instead of hindering the architect in his design, should partial solution should be devised, which would permit the use of apparent iron construction, within the spirit of our laws. We might use exposed iron in a partly decorative way to indicate the constructive members which are concealed of necessity, for fireproof reasons. I cannot imagine a more natural and beautiful solution than to treat these iron and steel constructions with curtain-walls, by honestly showing the iron or steel on the façade, with a filling in of terra-cotta, brick or faience, with projections constructed in apparent iron and terra-cotta. But such a solution is even more difficult to talk about than to execute. If the laws should be revised, as suggested, we could only wait for some one capable to experiment in this direction.

ment in this direction.

Let us now consider the artistic treatment that is possible under existing legal conditions. The utilitarian problem which confronts us is simply a bee-hive, or manifold collection of similar cells, with equal divisions, both lateral and perpendicular. As in all architectural study, our façades should, as much as possible, interpret this interior condition of things. In order to do this, there are but two principles of design which suggest themselves. One is, to build a façade and to pierce it with windows equal in size and distribution, leaving equal wall-surfaces to be decorated with ornament and detail. But this would not be an artistic solution, for it is simply giving up all endeavors to meet the difficulty—for architecture should demand, first of all, that we know how to make openings in a wall so as to first of all, that we know how to make openings in a wall so as to have a proper and agreeable relation between them, and to leave well-proportioned wall-surfaces. Shadows from projections are always secondary to the deeper and larger shadows that these openings produce, and of still less importance are the lights and shadows obtained by ornament. An equal distribution of openings, with ornament, may be decoration, but it is not architecture. It is, as it were, decoration applied to a treatment legitimate only for light-wells and rear yards — a checker-board arrangement. Any good architectural rear yards — a checker-board arrangement. Any good architectural building must always look well, and be interesting to the architect, when seen either at a distance, or by moonlight or twilight, when only the main masses are apparent. The other principle in design is that of unequal division. To secure this, which seems to me to be the true principle — i. e., a large opening in contrast with a small one, or the grouping of openings together, and the proper color and proper in mall surfaces, we must of necessity respect to combining variety in wall-surfaces, we must of necessity resort to combining some stories in one motif. In so doing, instead of filling-in these large motifs with stone divisions, is it not more rational to allow the steel, iron or other construction of the interior floors and partitions to be apparent, instead of entirely masking them with masonry in the façade, and destroying the true value of the openings; that is to say, is it not more rational to accentuate the motif by filling-in with some other material different in character and color, rather than with a pierced wall of stone. Such apparent iron construction in these motifs should then be treated or decorated in that light and delicate way which the nature of the material would seem to demand. This would give the composer almost absolute liberty in applying the same great principles of composition as obtain in other problems.

principles of composition as obtain in other problems.

With such difficulties at hand, we must more and more demand from the critics and the profession alike, an absolute freedom from all narrow and biased prejudices. Taste is a matter about which there are many perverted ideas. People are more sensitive about questions of taste than about almost anything else. I really believe that there has been more rubbish written in this relation than in politics or religion. Every man's taste, like his orthodoxy, is personal. It belongs to himself and to nobody else. It is therefore sonal. It belongs to himself, and to nobody else. It is, therefore, a very presuming thing to condemn a work of art because it does not happen to accord with your taste. Think, first, of what the artist has endeavored to do, and then how he has done it. We hear men say, "we know what pleases us"—but it surely requires but little taste to know that. I have heard men who called themselves architects, condemn the best portions of the Louvre, and other great works in architecture, because of their petty prejudices and their little formulas of good taste. They write or dogmatize in a way that is sometimes very persuasive, using superficial arguments, and perhaps applying some well-known principles, without being able to recognize the exceptions. It is difficult, in fact, to determine the difference between a prejudice and a principle. We must no more mistake prejudices for principles in art than in life. We should not be too outspoken about our prejudices, but should make proper allowance for our temperaments. Some men have so much conceit that they do not hesitate to condemn in toto, because of their little prejudices, works of art which have been considered masterpieces alike by artists and by an intelligent and admiring public for centuries. They write critically, not only about individual buildings, but uries. They write critically, not only about indiv they decry entire epochs in the history of art. freedom from this. We must demand

Some men would fain settle the height and projection of a cornice before taking their pencil in hand. The pilaster need not of necessity be a buttress—a cornice need not of necessity crown the entire height of a building, simply because of the etymology of the namethis especially, when the building is so high that no reasonable projection could crown it, or be weighted enough to be held in place without iron. Webster and Worcester are not criteria in architecture. A pediment need not necessarily receive a roof because it was originated for this purpose. Even broken pediments, so much deplored by Purists, have been built by the greatest of artists. They cannot be said to be bad, when they compose well and look well. The masterpieces of architecture, of all ages, contradict such theories, and show them to be prejudices. While we can refer to such precedents, we need not fear to build attics, or to decorate with

pilasters and pediments, if they look well.

The story is told of Hayden, that a pupil brought to him one of the Master's compositions, and asked him if certain sequences were not wrong, or contrary to the rules. Impatiently, the Master replied, "Yes, but they sound well." If a design looks well, it is well. Of course such freedom should not be carried so far as to become

It is right to be logical, but a work of art was never beautiful solely because logical. The most difficult thing in composition, and I believe this to be true in all art, is to know how to be simple — to be simple without being stupid and empty; to be firm and strong without being hard and angular; to have good detail, which on the one hand, does not assert itself to the injury of the composition, and on the other hand is not timid for fear of a want of refinement. When a man has acquired a certain knowledge of his art, timidity is almost as bad as vulgarity or brutality, and weakness as unpardonable as

Therefore, in solving this exceptional problem, the "high office-building," we must demand, while holding to precedents and traditions as much as possible, perfect freedom in composition, and, above all, avoid copying or adapting entire motifs or parts of other buildings that we have seen, to these new conditions. We must compose, and not copy. Only in this way will the new problem play its part among the numerous and varied other conditions of our life, to influence modern architectural style in its further development.

New conditions have always demanded of contemporaneous architects, a modern architecture expressive of the times, and every honest solution of this new and most difficult problem should be allowed to have its proper and natural influence upon our architecture.

PROFESSIONAL ETHICS.1

HE calling of the architect differs materially from other professions, in that it requires for its proper exercise a combination and variety of abilities and acquirements known to none of the others, and also in the fact that its practitioners have never fully agreed in any statement of the needed qualifications for its exercise, or the relative importance of such qualifications; nor have they to any extent, as in the three so-called learned professions, bound themselves by any tests of examination that might demonstrate the possession of even the rudiments of technical information or personal aptitude for the practice of their chosen calling. Although in older countries the accumulations of precedent have done something towards the education of the people as to the rights and duties of architects, still, even there there is much to be done in this direction, and the courts and societies are constantly bickering over questions of morals, manners and custom that should be settled by plainly-stated rules. So that we have little to learn from them except through the lessons of their failures.

Such being the case under the older civilization, it is no matter for surprise that with us the title of "profession" is somewhat scorn-

fully denied to the practice of the architect.

It is not only the ignorance of our employers as to what we should do, how we should do it, and the value of the service when rendered; do, how we should do it, and the value of the service when rendered; but all these matters are purposely confused and befogged by the deliberate efforts of the ignorant, reckless and unprincipled, who hang on the outskirts of all callings, the limits and responsibilities of which are vaguely defined and which seem to offer soft-handed employment and easy living to the enterprise and impudence of incompetency. To the disreputable efforts of these, is added the eccentricity of men of real ability who try to turn the current of general practice into narrow channels, and thus to enhance the value of their specialty and make it the only standard for all.

A new profession offers more changes for misunderstanding and

A new profession offers more chances for misunderstanding and

has greater need of definition and explanation.

While we suffer to some extent with our public, from lack of years and familiar precedents, we are better off than others in the ab-

Read by John A. Fox before the Boston Society of Architects,

sence of accumulated prejudices, and in a freedom of action unknown There are no barriers of caste. in older communities. industry will raise any man to a good position and maintain him in it; and that without resort to dishonorable or even questionable practices. Above all, the control of our course and policy lies not with any small number of brilliant, eccentric or temporarily-prominent leaders, but in the great body of the middle professional class, the "all-round" architects who do the bulk of the work and have the power through proper organization to dictate rules of practice that must in due time prevail. Immoral, irregular or eccentric efforts can work no great injury to the solid front of the majority. Although the practice of our larger class is, in the main, reputable and consistent, it is a fact that the neglect to combine in the appropriate of any intelligible statement of proper methods. the announcement of any intelligible statement of proper methods leaves our position too much the sport of accident and misunderstanding.

"We must settle all important relations to each other before we can make any progress toward an assured and dignified standing with our patrons, the public."

The Philistines who look upon every calling as one more chance for personal gain, endeavor to persuade us that our occupation is a combination of manufacture and commerce; partaking, on the one hand, in all the economies, both legitimate and fraudulent, of manufacturing; and on the other, in the common advertisement, self-assertion, open rivalry and solicitation of trade, and so in the upblishing felselood and fraud only too frequent in mercentile. unblushing falsehood and fraud, only too frequent in mercantile affairs

If the practice of architecture were a trade, it would be subject only to the control of such commercial morality as the times afford, and such regulations as might be forced upon the individual for the good of his competitors. If not a trade, the first step is to define clearly in what manner it differs from less intellectual or artistic callings, and what is right and what is proper in its practice. By what is right is understood some guide in ethics, or the special morals applicable to the pursuit in question, and to be embodied in morals applicable to the pursuit in question, and to be embodied in fixed rules; and by what is proper, some recommendations for conduct, not absolutely compulsory, but such as may be defined as "good form." Something by which the layman may be enabled to gauge approximately the standing of an architect.

"Rules of professional ethics refer only to those relations to clients, brethren or public, which differ from those of laborers, mechanics and tradesmen."

mechanics and tradesmen."

There is a vague notion prevalent that all professional men should be gentlemen. The much-abused term is of little use for our purpose, as its interpretation is subject to too many fluctuations under differing social conditions.

Our calling is not at present a profession, except in the practice of a minority, but it may be claimed to be in a state of evolution; with the full standing of professional honor and legitimate practice as its goal, and on account of its condition of progression and reformation, especially in need of codes and definitions.

It is useless to talk of independent and isolated action. We have arrived at a stage of progress when the safety of the many demands union and organization. If we would not have rules forced upon us to our injury, we must make and publish better ones ourselves. There is no surer way to lower all professional standards than by "cut-throat competition." While the better men prey on each other, the worst are the only gainers.

Our problem differs from any to which we can turn for guidance or example. We must work it out, as we have been forced to work out other new measures of self-government. We cannot perhaps originate a new architectural style. We can and should formulate

a style of professional practice.

THE "UNIFICATION" OF LONDON.

HE amalgamation of the ancient corporation of the City of London with the London County Council is of such great importance that no excuse is needed in laying before the readers of the American Architect the position of this important

question in London at the present moment

Unification has been a word in the mouth of all good citizens who take interest in the well-being of the vast metropolis for many months, even years, past. The pros and cons of the question have been fully discussed in all sections of the community, but what makes it of the greatest interest at the present moment is the issue of the Report of a special Royal Commission appointed to consider the present model which the present consider the present model which the present conditions under the present conditions under the present conditions are presented to consider the present conditions and the present conditions are considered to consider the present conditions are considered to consider the present conditions are considered to consider the present conditions are considered to consi the proper conditions under which the amalgamation of the City and the County of London could be effected, and to make specific and

and the County of London count be enected, and to make specine and practical proposals for that purpose.

Great opposition has at all times and on all hands been placed in the way by the ancient Corporation of the City, to any suggestions that have been made from time to time in former attempts to deal with this problem of London government. Ever since the year 1835 some reform of the constitution has been aimed at. The progressive party of the London County Council have used all their influence to bring the matter forward again, as they feel that one metropolis like London cannot and should not be governed by two distinct bodies, but that all local government should be under one supreme Council, including the old City and the many districts comprising Greater London as now embraced in the Administrative County of London.

It certainly seems odd to the outside observer that whereas

certain bridges of London within the City are under the Corporation, those west of Temple Bar are under the management of the London County Council; on the other hand, the drainage of the City, as well as of London as a whole, is controlled by the Council. certain parks and open spaces, such as Epping Forest, outside the area of the City of London are under the care of the Corporation, while other parks, except the Royal Parks, within the metropolis are looked after by the Council. Dangerous structures, unhealthy areas, housing of the working-classes, etc., are in the hands of the Commissioners of Sewers in the City, but of the Council outside that area, while such municipal government as concerns gas-testing, water-supply, asylums, storage of explosives, street improvements, reformatory-schools in the City come under the supervision of the Common Council, similar matters outside that area being cared for by the London County Council. The police within the City are Corporation servants outside Government officials.

Such examples of the complication of local government now existing within the Administrative Council of London (which includes all London) are sufficient to show why the cry is for reform. On the other hand, there have been many points of objection raised by the City Corporation to any change: as the custodians of immense sums of money and most valuable property, with many ancient and wealthy "Companies" and "Liveries," and with the strong argument that they have never abused their trust, but have ever been worthy and fair administrators of the powers vested in them, they call out loudly against any interference with their ancient rights, and any appropriation of or change in their administration of the charities held in trust by them. The ancient customs of the mayoralty, surrounded with mediæval pageantry, with the procession through the streets known as Lord Mayor's Show, the functions, banquets and lavish entertainments at the Mansion House, the hospitality shown the distinguished visitors to England, the the hospitality shown the distinguished visitors to England, the administration of justice, with the Lord Mayor as chief magistrate of the City of London, all tend to surround the Lord Mayor and Corporation of London with a popularity not easily shaken by any suggestion for the benefit of remodelling local government. The Lord Mayor's Show is far more interesting to the general herd than the maintenance of an efficient main drainage of the city.

With such a problem before them, the Commissioners appointed to make suggestions for reform had no mean task.

Briefly, it may Let us hastily glance at the result of their labors. be said, looking at the question from a neutral standpoint, that the report before us contains most masterly and statesmanlike proposals, which should form the basis, at some early date, of an Act to be passed by the British Parliament.

Taking the reference made to them, the Commissioners confined their report to how best to bring about the change; this view of the reference, however, met with strong disapproval from the Corporation, and the City Solicitor, who formed one of the Commission, resigned his seat at an early stage of the proceedings, and the Corporation went so far as to withdraw all their witnesses who were to be examined before the Commissioners.

London may be said to consist of many towns within one metropolis, and the difficulties are thereby greatly augmented. This was evidently seen by the Commissioners when they proposed one supreme central governing body with several strong local bodies under them. The administration of London demands a town rather than a county government, and to use the words of the

report:

"It will be at once apparent that the principal difficulty in effecting a reorganization of the government of London as a whole, effecting a reorganization of the government of London as a whole, lies in the existence of the City as now limited, containing barely one square mile (671 acres) out of the 118 miles (75,442 acres) covered by the Administrative County; with a population insignificant at night—only 37,700 out of 4,232,000 in the whole county—but in the daytime more throughd than the most crowded district of the rest of London; a rateable value out of all proportion to its size, forming one-eighth instead of 1-112th of the whole; and with an historic reputation for splendor and wealth which are the pride, rather than the envy, of the rest of the metropolis."

The huge area and population of London makes it necessary that there should be subsidiary bodies to discharge local highway, sanitary and other duties, and the Commissioners advise the placing in the hands of these minor todies as much of the detail and routine work of local administration as possible, to relieve the ever-increas-ing work which otherwise would be thrown upon the shoulders of one body, reserving to the one central authority the power of making by-laws to govern the lesser bodies and the control of matters which affect the metropolis at large rather than individual districts.

It is proposed that the one large body, and the several minor bodies should consist of members returned by popular election. The supreme body, to be called the "Mayor and Commonalty and Citizens of London," should succeed to the present City Corporation Citizens of London," should succeed to the present City Corporation and County Council, the Mayor being the titular chairman of the Council and enjoying all the rights, offices, dignities and privileges of the present Lord Mayor, the chief magistrate and representative of the people. The Lord Mayor should be paid, but no other member of the body, and the chief of the staff should be a permanent official "possessing legal qualifications," and not a member of the Council, as is the case with the present County Council, where the Deputy Chairman is in receipt of a salary as the nominal head of the administrative officers. the administrative officers.

The suggestions made with regard to the functions of this new Corporation are, first and foremost: it must have strength, dignity authority over the subordinate bodies; it must frame by-laws for these bodies and, we take it, administer to such wants as main sewers, main roads and embankments, fire-brigade, commons, parks and open spaces, street naming and numbering, licensing of theatres, (except those within the jurisdiction of the Lord Chamberlain), music-halls and race-courses, bridges, street improvements, water, gas, asylums, markets, etc.

It should here be mentioned that although the new Corporation is suggested to embrace the old City, yet, for minor administrative purposes, the City is to have a lesser governing body as in other districts; so that the City should still have control over certain of its funds, revenue and existing debts, but the majority of these where not of local interest would be vested in the new Corporation.

The next paragraph of the Report which calls for attention is of

sufficient interest to all to be quoted in full, bearing as it does upon the historical and ancient customs of the City of London. "As the new Corporation would thus inherit and succeed without

breach of continuity to the powers and possessions of the existing Corporation, and as it would be within its discretion to assign to the Lord Mayor such sums as might be thought proper to meet the expenses of his office, we may look for the maintenance in the future of all the useful and many of the stately traditions of the past; and, in particular, the Lord Mayor may be trusted to represent before the world the great community of which he is the head, with the splendor becoming his position. It may be noted in this connection, that among the privileges which would be transferred, should our

that among the privileges which would be transferred, should our recommendations be approved, would be the right of special access of the Corporation to the Sovereign, and of the presentation of petitions at the Bar at the House of Commons."

The paragraphs dealing with the administration of law and justice are perhaps too wide of the mark and of too local an interest to come under review here, and we pass over these matters, as well as the many pages given to questions of finance, glancing at the functions of the minor or local authorities proposed for the City and other parts of London as a whole.

other parts of London as a whole.

These functions comprise, amongst others, sanitary administration generally, construction of new buildings, control of unhealthy dwellings, drains other than main sewers, maintenance of roads other than main highways, small street improvements, regulation of traffic and tramways, maintenance of small open spaces, powers as to electric light, gas-supply from small companies, overhead wires, sale of food, drugs, etc. No duties should be undertaken by the central body which could equally well be exercised by the local

Such, then, is the scheme proposed for the future government of London, and we have no hesitation in saying, that with the extreme difficulties of the question, and the delicacy of feeling shown not to trample upon existing privileges and functions of ancient and time-honored renown, the Commissioners have fulfilled their task in a most praiseworthy manner, and made practical suggestions which we trust to see the British Constitution will not fail to enforce within a reasonable period. Briefly, it may be said that the proposals retain in the new Corporation all that is worthy of the old Corporation, and, by making it a popularly-elected body, all the desires of the progressive members of the London County Council would be met, and "unification" shortly be brought about. Seldom, if ever, has it been our pleasure to peruse such a diplomatic document as this report.

NOTES ON THE EARLY CHRISTIAN MONUMENTS OF CORNWALL.

ORNWALL possesses a larger and more varied number of early Christian monuments than any other county in the British Isles. So plentifully are they scattered throughout this district, that it may occasion surprise to many of our readers unacquainted with the subject, when they learn that it contains upwards of three hundred crosses alone, besides some five-and-twenty or thirty inscribed stones, two inscribed and ornamented altar-slabs, and four coped stones, two only of which latter are, however, perfect.

Further evidence of the frequency of their occurrence is attested

Further evidence of the frequency of their occurrence is attested by the existence of some thirty or forty cross bases, representing all that now remains of the original monuments, as the crosses belonging to them have long since disappeared, having probably been used as gate-posts, or applied to some other utilitarian purpose, and alas! in many cases entirely destroyed.

In conducting the present inquiry, it will first be necessary to glance briefly at the early Christian history of Cornwall, and see to what extent it was connected with other counties, and how its monuments were affected by that intercourse. When Christianity was first introduced into Cornwall is not, and probably never will be known, and the absence of any monuments bearing Christian symbols tends to show that it was only Pagan during the Roman symbols tends to show that it was only Pagan during the Roman occupation. Indeed, it was not until the mission of S. Germanus of Auxerre, and S. Lupus of Troyes in A. D. 429, that the existence of Christianity in Britain is associated with the names of ecclesiastics known in the history of other counties.

Several of the Cornish churches are dedicated to Gallican saints, as, for example, S. Germanus of Auxerre, S. Hilary of Troyes, and S. Martin of Tours, thus indicating that, in all probability,

Christianity was introduced into Cornwall from Gaul as early as the beginning of the fifth century, during the lifetime of these saints. Again, the connection between Cornwall and Brittany at this period is shown by the dedication of two churches to S. Brioc, the founder of Treguier and S. Brieuc, before A. D. 500; to S Winwolanus, Abbot and founder of Slanndevensch, previous to A. D. 504; and in the sixth century to S. Samson and S. Budoc, Bishops of Dol., to S. Ninnoca, or Non, the mother of S. David and foundress of San Ninnoc; and to S. Patern of Vannes, and S. Pol de Léon.

Churches dedicated to Welsh saints are represented by S. Cybi

of Slangybi, and S. Carannog of Slancrannog — both in Cardigan-shire, and are associated with Cuby and Crantoc in Cornwall. Irish saints are also commemorated, such as S. Columba, by S. Columb Major and S. Columb Minor: S. Colan, at S. Colan; S. Hya, at S. Ives; and S. Kieran, at S. Keverne. Finally, we have Saxon or Danish saints in the names of S. Cuthbert, S. Dunstan, S. Wene-

frid, S. Olave and S. Werburg.

Many other saints might be mentioned, but the few names given will be sufficient to establish the relationship existing between

Cornwall and the neighboring countries.

The subjection of the British bishops to the See of Canterbury took place in the reign of King Athelstan, A. D. 925-940.

The inference to be drawn from the foregoing dedication goes to show: that Cornwall was more intimately connected with Brittany and South Wales than with Ireland, a fact which is further proved by the character of the inscriptions on the rude pillar stones, and the ornament on the sculptured crosses.

With regard to the works which have already appeared on the subject, Mr. J. T. Blight's "Crosses and Antiquities of Cornwall," is, as far as it goes, the most complete. The first edition was published in 1856, and the second and last in 1872. But the stones are not arranged in any methodical way, and follow on each other more in the sketch-book form. Moreover, there are only about 108 examples illustrated, and some 60 others mentioned, which according to the figures already given, falls very far short of the total number. This may be accounted for by the fact of a great many having been discovered since, including most of the ornamented crosses. The value of the book lies in the information, showing the position of several of the stones in his time, which from one cause or another have since been moved.

Leyland, in his "Itinerary," notices the inscribed stone at Castleton, and Camden (1606) the cross base of Doniert. Borlase (1754) illustrates eleven of the inscribed stones, but no crosses. (1814) gives four crosses, and most of those stones already illustrated by Borlase. Much more has been done in modern times, as in 1876, Æ. Hüöner illustrated twenty-two inscribed stones from Cornwall of the pre-Norman period. On this class of monument the most valuable aid has been rendered by the Reverend W. Iago, of Bodmin, who intends shortly to publish a complete book of his labors in this direction.

Before, however, entering upon any description of the monuments, it is necessary to state in what manner we propose to treat the subit is necessary to state in what manner we propose to treat the subject, in order that the reader may be enabled to follow it without difficulty. And it will be readily understood that, unless some systematic method of procedure is adopted at the beginning, confusion is likely to arise. After mature deliberation, the author has decided that the simplest and most direct manner of dealing with the subject is to arrange the monuments, as far as possible, in an order corresponding with their architectural development, communications with the subject gradually areading agriculture architectural development, mencing with the rudest, gradually proceeding pari passu to the most elaborate. At the same time it must be distinctly understood, that the mere fact of placing one particular type of cross before another does not imply that it is on this account earlier than those which follow.

The inscribed stones will first be noticed, since our actual knowledge of the numerous monuments, as a whole, shows that they are the oldest. Following them will come the various types of crosses, and although the unornamented examples of the latter class are numerically the largest, it is only intended to illustrate a small roportion of them by way of carrying-out the above method following the thread, as it were — which gradually leads on to the highly ornamented and more interesting Celtic or Saxon crosses. These latter will be more fully considered, comparisons of the ornament upon them being made, when occasion requires, with similar examples in other parts of Great Britain, as well as notes on foreign influences traceable in their detail.

It may here be remarked, that the specimens it is proposed to illustrate were all measured and drawn to scale by the author, and in the case of the inscribed stones and ornamented crosses, careful rubbings were taken, which, to ensure accuracy in reproduction,

were afterwards photographed to the required scale.

A word of explanation regarding the names of the parishes and villages in Cornwall will be found useful, when giving the different localities in which the various monuments are situated. The county The county is divided into twelve deaneries, and contains about two hundred and thirty-eight parishes. With few exceptions, the chief town or and thirty-eight parishes. With tew exceptions, the chief town or village of a parish bears the same name as the parish itself, the former being called, in distinction, the "churchtown," because it contains the parish church. Thus, for an example, a person may be in Altarnun parish, and yet be three or four miles from Altarnun hurchtown. The author experienced this on one occasion. Meeting a man, he inquired how far it was to Altarnun, "Yoom (you are) in Altarnun." "Yes, but to the churchtown?" "Oh, iss, well, I s'pose 'tis about a dree mile"! It will be seen from this that the distinction is somewhat necessary

Having thus introduced the subject, we will now proceed in detail

with the monuments themselves.

It has been found convenient to broadly divide the erect monuments into six classes, viz: (1), Inscribed pillar stones; (2), Wheel crosses; (3), Unornamented holed crosses; (4), Ornamented crosses; (5), Latin crosses; and (6), Miscellaneous Monuments; and to treat first of their geographical distribution.

The inscribed stones, as well as those included in Class 6, are more thickly disposed in the middle and western portions of the county, and gradually diminish in numbers towards its eastern end. It is curious to note in passing, the progress of this diminution, for, in the adjoining county of Devon there are only three specimens of these stones, while the next two counties of Somerset and Dorset

have only one in each.

The Wheel crosses, locally called "round-headed crosses," are by far the most common and will subsequently bedealt with in fuller detail; suffice it here to say, that by a "wheel cross" is meant an upright stone, with a round head of a greater diameter than the width of the These with the remaining classes are pretty evenly

shaft below. I nese with the county.

distributed throughout the county.

Class 4, the Ornamented crosses, are principally found in the fact if any are now in situ. Most of them have church-yards, though few, if any are now in situ. Most of them have been brought to light in comparatively recent years, being found built into the church walls, and were only discovered during the restoration or rebuilding of the fabrics.

Why they should have been thus used is not known, but it is really most probable that after the disappearance of the Celtic church they ceased to be venerated, and when new styles of Gothic architecture were introduced, their beauty failed to please, so, lying uncared-for in the churchyards, they were simply used as building material. Local tradition on questions of the kind is seldom silent and often very amusing, as the following instance illustrates: The old lady who looks after the church at Cardynham, where a very fine cross was taken out of the wall, stated, in explanation of its having been there, that "It was hided away in the church walls by the Catholics"! adding that "when it was tooked out, the blacksmith wanted to have 'un to bind his wheels 'pon, but e' (i. e. the cross) wasn't 'ardly big enough"!

The majority of these monuments were the old church-yard crosses erected for devotional purposes, except in a few instances where the inscriptions upon them show that they are commemorative.

Generally speaking, the greater number of the monuments are dotted about on the bleak moors, originally far from any habitation, and the questions naturally arise, For what purpose were they erected? and Why do we find them in these out-of-the-way places? In the first instance, there can be no doubt that, like the church your crosses,

they were also erected for devotional purposes, or for praying-stations, a fact which is borne out by the following extracts: In, "Dives et Pauper," a "worke emprynted by Wynken de Worde" in 1496, there is the following quaint assertion:—" For thys reason ben crosses by ye wave than whan folke passyinge see ye croysses, they shoulde thynke on Hym that deyed on ye croysse, and worshippe

Hym above al thynge.

Again, the first clause in the will of D. Reginald Wertherderwa, Principal of Bull Hall, in Oxford, and Rector of Creed, Cornwall, dated February 11, 1447, sets forth that, "New stone crosses [are] to be put up, of the usual kind, in those parts of Cornwall from Kayar Beslasek to Camborne Church, where dead bodies are rested on them to burial, that prayers may be made, and the bearers take some rest." The foregoing gives a very late date to some of the monuments; at any rate, it proves that even in mediæval times it was the custom to erect crosses. We must remember, nevertheless, that in those days Cornwall was far removed from centres of advancement, and it is, therefore, highly probable that its crosses, like its architecture, were of a later date than those in other and more civilized localities. As no particular kind of cross is mentioned in the will, we may assume from its date that Latin crosses were implied. will, we may assume from its date that Latin crosses were implied, since some of this type belong in all likelihood to this period, and were, as we shall show, the latest form adopted. In reply to the second question, there can be no doubt that many of the crosses were erected in certain positions to act also as guides, or landmarks, across the county in the old days when the Cornish land was an almost trackless waste. The traveller or pilgrim, journeying then to some distant chapel or Holy well, had little besides these stones to guide him on his way over the moors, "from cross to cross," just as we see the Stations of the Cross in Catholic countries, leading up to a Calvary. Even at the present time many of these monuments we see the Stations of the Cross in Catholic countries, leading up to a Calvary. Even at the present time many of these monuments are to be found in situ, by the roadside, thus showing that from time immemorial the old cross tracks have been preserved, and the now accepted term of "wayside cross" has been applied to those which are thus situated. In several cases, however, the paths, "worn by the feet that are now silent," have long since disappeared. Several monuments are to be seen at the intersection of roads, and although in many instances the crosses have been removed from the positions they must have originally occupied,— i. e., in the middle of the crossing — the intersection is still called Such and Such a cross. Some stand by the sides of streams, and others are now placed on the tops of hedges, where they have been removed, partly for safety,

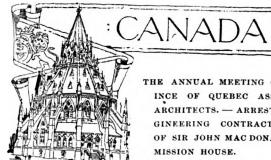


but chiefly, perhaps, to be out of the way. There is an old tradition relating to the wayside, or moorland crosses, which is worth recording, to the effect that it was a custom amongst the richer pilgrims to leave alms on the crosses for the benefit of the poorer brethren who followed them.

The Reverend W. Haslam, in the Archaeological Journal, Vol. 4, 1847, p. 313, after quoting the passage already given from "Dives et Pauper," adds his own valuable remarks to those of Wyken de Worde which we have just quoted:—

"This may have been the reason in de Worde's time, and perhaps was partly so even in the early days when these crosses were erected; but the alleged reason in the old writers, and object of the wayside crosses was, to 'guard and guide the way to the church.' With respect to the former of these objects, I can attest that very many of these crosses evidently still answer this purpose to which they were originally appointed. In several parishes there are 'church paths' still kept-up by the parish, along which crosses, or bases of crosses, yet remain, and generally it will be found that they point toward the church. Where the path has been —as in most cases — obliterated and lost, the crosses in some instances still remain, not fainting the west according to the investible mediant. not facing the west according to the invariable rule regarding church crosses, but pointing and guiding in the direction of the church. As to the allegation that they 'guard the way to the church,' there can be little doubt that in those early, and it may be superstitious, times, such was regarded to be the efficacy of the holy sign."

ARTHUR G. LANGDON.



THE ANNUAL MEETING OF THE PROV INCE OF QUEBEC ASSOCIATION OF ARCHITECTS. - ARREST OF AN EN-GINEERING CONTRACTOR. - STATUE OF SIR JOHN MAC DONALD. - A NEW MISSION HOUSE.

HE annual meeting of the Province of Quebec Association of Architects was held in Montreal on October 4th. The gathering was not large, but those who were present were the principal architects of the city, which shows that the importance of the association and the objects it has in view are fully appreciated by those best able to promote them. The report of the Council had those best able to promote them. The report of the Council had the same sorry admission to make that is made by nearly all such associations, namely, the carelessness of the students and their unwillingness to take advantage of the opportunities provided for their education, although in this particular instance, it was stated that difficulty had been experienced in obtaining duly qualified teachers. The plan of a monthly dinner, followed by papers to be read and discussed, had not answered as well as it had been hoped, and the Council years much regretted that these organious for social and the Council very much regretted that these occasions for social intercourse were neglected. The president elected for the ensuing year is M. Charles Baillairgé, of Quebec, who, during the afternoon session, read a very interesting paper on "Foundations in Deep and Unreliable Soils." Another paper, on the "Aspects of the City in the Future," by Mr. A. T. Taylor, dealt with the laying out of streets, and building with reference to some preconceived plan, and not allowing a city to "grow up at haphazard." In the evening, a "conversazione" was held in the galleries of the Art Association, in which were exhibited architectural drawings, sketches and views. Two notable articles on exhibition were examples of old Chinese wrought-iron work, lent by the Hon. G. A. Drummond, the pattern consisting of chrysanthemums and lilies. On the whole, the convention may be regarded as thoroughly satisfactory, and the promoters are to be congratulated upon the manner in which the Association and its work are so well kept before the public, by which means it is seen that there is in its objects something more than that which the public are fond of ascribing to such bodies - its own aggrandize-

The arrest, the other day, of Mr. Emanuel St. Louis, the labor contractor on the bridges of the Lachine Canal, caused a decided sensation in political circles. The charge upon which Mr. St. Louis is arrested is that of obtaining money under false pretences, there being no less than six counts in the charge. It was announced a short time ago that the Dominion Government intended to institute a short time ago that the Bolimino Government intended to institute a civil suit, and this was surprise enough for his friends, who believed that the services rendered by Mr. St. Louis to his party would shield him from proceedings that, it was hinted, might be taken against him for alleged "boodling" in connection with great engineering contracts he had carried out for the Dominion Government. Happily, the days for condoning frauds of this nature are passed. Mr. St. Louis claimed on account of "extras," the sum of \$63,000, the claim was contested, and judgment given against the contractor. Proceedings were then instituted to recover from him no less a sum than \$143,000, which he is said to have received over and above the proper payments for his work. It was, however, discovered that Mr. St. Louis had destroyed his time-books, checks, cash-books,

journal and so on, and upon this, the warrant for his arrest was issued on the criminal charge, and he has since been arrested, but released under heavy bail. Mr. St. Louis claims that he is quite ready to meet his accusers, and has no fear of the result of the trial, while it is pointed out that the case will bring to light some very "shady" transactions, to say the least, on the part of Ministers and others in authority. Of course, all this remains to be seen. The others in authority. Of course, all this remains to be seen. The question of Ministerial authority is, no doubt, a feature of the case. A Minister is responsible for the doings of his subordinates: responsible government would be at an end, if it were not so; it is, however, perfectly possible for subordinates to do wrong-without the knowledge of their superiors. This may occur through mismanagement of a department, or it may not be through any such cause, and it has been declared that ignorance of the illegality, and prompt correction of the wrong, relieves responsible Ministers. The point in this case is, not whether the Minister is responsible, for there is no question but that he is; but whether the occurrences took place through carelessness on his part, or through some conspiracy organized to circum-

A fine statue (the work of Mr. H. McCarthy, a Canadian sculptor) of Sir John MacDonald, the late Premier of the Dominion, was unveiled in Toronto on October 13. The statue occupies a magnificent site at the southern part of the Queen's Park, some distance in front of the local Parliament Buildings and facing down the Queen's Avenue. Great as was Sir John MacDonald, the father of federation, and, therefore, the maker of Canada, a finer site could hardly have been found in the whole country, so expensional includes federation, and, therefore, the maker of Canada, a finer site could hardly have been found in the whole country; so exceptional, indeed, is the site, that many have said it should have been occupied by no other statue than that of Her Majesty, the Queen; but it may be remembered that honor to the agent is honor to the principal, and the ambassador is clothed with the glory and dignity of the sovereign he serves, and while we do honor to the memory of the leader of Her Majesty's Government we do honor to Her Majesty herself. While we like to have statues of Her Caracinus Majesty in will be to have statues of Her Caracinus Majesty in will be to have statues of Her Caracinus Majesty in will be to have statues of Her Caracinus Majesty in will be to have statues of Her Caracinus Majesty in will be to have statues of Her Caracinus Majesty in will be to have statues of Her Caracinus Majesty in will be to have statues of Her Caracinus Majesty in which was the same than the same thad the same than the same than the same than the same than the sa we like to have statues of Her Gracious Majesty, it will not be by statues that her greatness and goodness will be remembered; she has an ineffaceable monument imprinted on the hearts of all her

has an ineffaceable monument imprinted on the hearts of all her subjects throughout the world, while it would be difficult to find an intelligent man, woman or child in any nation of the earth who did not hold her in esteem, as a woman and a queen.

Some dear, good people, with plenty of money to throw away, appear to make it the business of their lives to prevent the non-fulfilment of at least one scriptural prognostication. They fully appreciate and grieve for the distress of the poor, though they do not always set about the wisest means of alleviating it. Mistaken philanthropy costs a lot of money and it is sad to think how many deserving poor are passed by, to whom a little of this money would prove such a boon, while the recognized professional beggars, who would not, if they could help it, do an honest day's work to save their precious lives, are the ones that reap the benefits. A mission building has recently been opened in Toronto that gives to these building has recently been opened in Toronto that gives to these bums and loafers just the one thing they needed to make their vagabond lives serenely comfortable. They can now be accommodated for the — to them — trifle of ten cents a night, with a comfortable bed, either in a ward or in a separate cubicle, with a bath in the morning — hot and cold water, and a substantial breakfast. If drunk, they can have similar accommodation in a different part of the building, arranged with partitions raised a foot from the floor, and asphalt flooring so as to allow of hosing the whole place in the morning. Philanthropists can purchase tencent building has recently been opened in Toronto that gives to these from the floor, and asphalt flooring so as to allow of hosing the whole place in the morning. Philanthropists can purchase ten-cent tickets to give to beggars in lieu of money and no doubt some deserving poor may find a refuge there, but some of the frequenters of the now superseded "refuge" have been overheard discussing their plans for the day—arranging whose turn it was to visit certain well-known wealthy charitable people. One of them stated that he could visit fifty streets a day, and it was a poor street that did not yield ten cents, so with five dollars a day and a comfortable place for night at a cost of ten cents, such people do not fare badly. The building is heated throughout, and to it are attached a laundry, a restaurant, and a nursery for working-mothers to leave their a restaurant, and a nursery for working-mothers to leave their children in safety while they are at work. There are mission halls, with rooms for various charitable committees and societies, and all together it is, I suppose, the most complete institution of the kind in existence.

Two members of the Government Geological Survey, who were sent to report upon the mineral resources of the Kootenay District of British Columbia, have returned and presented an interesting report. Silver and gold are found in abundance and there are to-day between four thousand and five thousand people engaged in mining. One of the largest camps will this year ship a million dollars' worth of silver ore. Great damage was done this year to the magnificent forests of the district by fire, for which, to a great extent, the miners are said to be responsible.

MODERN PORTRAITURE IN LONDON.

T is not easy for a society of portrait-painters to keep up the standard we should wish, from year to year; and yet it is very doubtful whether the rank and file of modern artists, in this, as in other branches of painting, are inferior to the rank and file of other days. The mere fact of a picture having been painted a hundred years ago, gives it a sort of poetic halo which the modern artist cannot hope for; but if any one wishes to decide this matter for himself, he need only trudge around the Grafton Gallery and observe the fair women (mostly by old masters), and then saunter into the new gallery in Regent Street where modern portraits are now on view.

now on view.

A good, first-rate Reynolds, like the Duke of Westminster's "Mrs. Siddons," is, no doubt, an exceptionally noble work. Romney's also, as seen in Mrs. Carwardine's portrait, is an exquisitely beautiful painting of the highest order. Gainsborough and Van Dyck (unrepresented by any first-rate portraits at the Grafton Gallery) are, on the other hand, frequently approached by modern painters. Rubens's "Anne of Austria" is unapproachable; and equally so are Rembrandt and Velasquez, neither of whom ever had the chance of painting what we consider a beautiful woman. But then, can we not equal Lely and Kneller, Opie, Hoppner, Raeburn, and a host of lesser stars?

But to return to the new gallery: Mr. S. J. Solomon's "Miss Edith Cerola Loder" is a noble piece of work, the face beautifully modelled and of the richest coloration, but, unfortunately, marred by the painting of the right hand. Had this only been handled with the same skill as the dress (and especially the satin bow, most softly painted), the picture would have left nothing to be desired. Close by this work is a portrait of "Mr. Edmund Gosse," painted skilfully in flat color by Mr. J. S. Sargent; and it is worth while to compare the diverse treatment of these two workmen, both equally admirable in their individual methods. Mr. Solomon's "John Beddington, Esq." is also most vigorous and life-like.

M. Bonnat's "Mrs. Margaret Talbot" is learned and distinguished; finely rendered as regards its harmonies of gray, but wanting in subtilty, and, consequently, somewhat hard. M. F. Cormon's "Monsieur Allard" is certainly not wanting in subtile modelling of flesh tints; and the vigor with which the expressive action of the up-lifted right hand is depicted, adds to the animation

M. Bonnat's "Mrs. Margaret Talbot" is learned and distinguished; finely rendered as regards its harmonies of gray, but wanting in subtilty, and, consequently, somewhat hard. M. F. Cormon's "Monsieur Allard" is certainly not wanting in subtile modelling of flesh tints; and the vigor with which the expressive action of the up-lifted right hand is depicted, adds to the animation of the face, which is evidently engaged in some exciting conversation. The attitude is most easy and original. But, perhaps, Mr. Orchardson carries off the palm with his "Portrait of a Boy." The child rests against a piece of furniture which looks very much like the back of a harmonium; at his feet are some books and toys scattered about and a furry donkey on wheels. The boy is holding a little drum and looks straight at the spectator. The painting is, apparently, of the simplest kind; one wonders why every one cannot do likewise! Fresh, slight, and at the same time subtile, it is a masterpiece of technical excellence, standing out amidst, what may be termed, a mass of terrible prettinesses by fashionable craftsmen.

termed, a mass of terrible prettinesses by fashionable craftsmen.

Mrs. Swynnerton cannot be accused of beautifying her models; but surely the plainest woman must prefer this artist's uncompromising truthfulness to such beautifying as the society painters indulge in. Of all terrors in art to be avoided like poison, are weakness and prettiness; and they almost invariably go hand-in-

Prince Troubetzkoi may be congratulated upon his clever portrait in shadow, of Mr. Gladstone. This is the "Home Rule Portrait"; under the glass is the bill itself, bearing the author's signature. It is the property of Mr. James Knowles.

under the glass is the bill itself, bearing the autnor's signature. It is the property of Mr. James Knowles.

"Mrs. Lebégne," by Bastien-Lepage, is a fine example of what the painter could do en grand. The flesh is somewhat heavy, possibly it may have darkened; but the painting of the quilted white satin dress and of the pearl ornament are masterly, after the manner of Velasquez. The elaborate background is a good example of its kind—sub-lued and kept in fair subordination to the figure.

Mr. Herkomer's fine Rembrandt-like portrait of a boy makes one wonder the more that he should have attempted such an impossible

Mr. Herkomer's fine Rembrandt-like portrait of a boy makes one wonder the more that he should have attempted such an impossible subject as a skirt-dance. Had M. Besnard done so, we might not have been astonished, and the result would certainly have been a startling effect of color; but these qualities are not to be found in Mr. Herkomer's picture, nor is the subject what we should have thought this artist would affect. Were it possible to give the movement of yards of gauze or silk twisting and twirling about, upon canvas, it is doubtful whether it would be worth doing. Why not leave such actualités to Mr. Dudley Hardy and Mr. Phil May, whose black-and-white atrocities are far cleverer, and being inexpensive, can easily be destroyed. Mr. Herkomer's picture is so large that it requires a considerable amount of wall-space; but, possibly, being a portrait, it adorns the lady's boudoir, and forms an attraction to her many admirers. It is curious to compare this dancer of the end of the nineteenth century with Hoppner's nimble lady at the Grafton Gallery; both are comic, where no comedy is intended, and neither of them is graceful; but the modern dance carries off the prize for stupidity and vulgarity.

S. Beale.



THE work that has been done by several authors for Switzerland, Professor Kossmann¹ has done for the Schwartzwald, and the comparative unfamiliarity of the remoter parts of the Black Forest to students and tourists gives this new book an unusual

1"Die Bauernhaüser im Badischen Schwartzwald," von B. Kossmann, Professor, Architekt und Bibliothekar. With 5 plates of etchings and 108 wood-cuts. Berlin: Wilhelm Ernst & Sohn. Price 12 Marks.

interest, to which a good deal is added by the curious sketch of the development of plan in the peasant dwellings, and the influence of race-elements on this and other parts of the architecture of this region. Viollet-le-Duc, somewhere, makes the startling assertion that the architecture of Switzerland, where to this day, in the mountain villages, houses are put together without using a single nail, has been handed down from a time when nails were unknown, and is substantially identical with that practised by our Aryan ancestors in the valleys of the Himalaya, perhaps a hundred centuries ago. Viewed from this point, the history of Swiss architecture, with its Indo-Germanic foundation, on which must have been superposed the ideas of every race that has inhabited Europe, from the Pelasgi down, still remains to be written; and Professor Kossmann's thorough study of his branch is particularly valuable. The first part of the book is devoted to types of plans, followed by a discussion of details, illustrated by many cuts, from which architects will not fail to gain some pretty suggestions; while the second part consists of large plates, each containing from seven to a dozen extremely pretty little etchings of exterior or interior effects. Architects will remember that books printed exclusively in a foreign language are free of duty, and can be imported by mail; and it would be hard to find a prettier or more suggestive book than this, at anything like the price.

In our issue of April 19, 1890, there was noticed in these columns "A Text-book on Roofs and Bridges," by Mansfield Merriman, Professor of Civil Engineering in Lehigh University. A second volume by the same author is now before us. It is perhaps not stating the fact too strongly to say that this is one of the best works upon the subject which has within recent years been placed within the reach of the practical constructor. It is a pleasure to look through a book which is written so clearly and concisely and in which the subject matter is treated so completely in all its details, without being either overloaded with unnecessary calculations or complicated by the use of involved mathematical formulas. It is a work which ought to find its place in the library of every architect who has to do with steel and iron construction. Up to within a very few years, steel construction was almost a "sealed book" to the average architectural practitioner, and he who would undertake to design his own metalwork was generally driven either to the rule-of-thumb methods of some of the architectural hand-books or became hopelessly entangled in the mazes of the higher mathematics amidst which the earlier scientific writers on construction veiled their lack of positive information. Fortunately this condition no longer exists and there are many architects in our large cities who are thoroughly conversant with the details of steel and iron construction: but even those who are most familiar with the subject will find that the work of so Practical a constructor, and so scientific an engineer, as Professor Merriman will afford many valuable hints on some features of metal construction which are apt to be ignored in ordinary practice. The book is given an added and very decidedly practical value by the incorporation of several very complete working specifications of bridge construction. Indeed, nearly all the problems, which, by the way, are worked out to the fullest extent and detail, are preceded by a specification such as is adopted by

exceed 125. The building-law of Boston practically limits this resultant to ninety. On the other hand, many of the constants would seem to an architect unnecessarily low. Thus the permissible pressure upon brickwork is put at 7 tons per foot, upon extra good limestone 21.6 tons, and upon granite 32.4 tons, whereas the building-law of Boston, which does not materially differ from the custom in other large cities, allows loads per foot respectively of 15, 40 and 60 tons. It should be added, however, that these constants are not put forward by the author as his own, but rather form parts of the specifications which he followed in designing the various bridge trusses. The work bears evidence of having been prepared for use as a text-book rather than as a hand-book for the practical constructor, and it therefore is open to criticism, in that it presents the standards of several different specifications, naturally leaving a doubt as to what conditions are the best. Such doubt would not trouble the expert, but it is so hard for most beginners to grasp the fundamentals of constructive science, that it would seem better to restrict constants and methods even more than has been done in this case.

In the introductory chapters there is included a very complete and handy pin-plate-and-rivet diagram, showing graphically at almost a glance the bearing, the shear and the strength of rivets, pins, plates,

^{2&}quot;A Text-book on Roofs and Bridges." Part III. Bridge Design. By Mansfield Merriman, Professor of Civil Engineering in Lehigh University, and Henry S. Jacoby, Associate Professor of Civil Engineering in Cornell University. New York: John Wiley & Sons, 53 East 10th St. 1894.



etc. It is one of the most complete diagrams of its kind, and contains more in less space than anything it has been our fortune to become acquainted with. Chapter V, which takes up a single problem of a plate-girder bridge is exceedingly valuable and is very rational in its process of reasoning and methods of deduction. The chapter on inspection and shop-practice by S. T. Wagner, formerly of the Phænix Company, deals with a factor of iron construction which is very frequently neglected by architects, namely, careful and thorough inspection of the metal from the time it is rolled until it is ready to be shipped on the cars.

ready to be shipped on the cars.

Altogether, Professor Merriman's book is a very decided addition to the literature upon the subject, and well repays careful study.

It is very difficult to know where to begin the review of a work which is so comprehensive in its scope, so painstaking in its detail and of so much vital importance to the professional man as the recently published volume by T. M. Clark. The author begins the opening chapter with words which are so pertinent that they will bear literal transcribing, wherein he says that Among all the business relations which men enter into, there are none, perhaps, more complex than those which are involved in the construction of a building, by the cooperation of a multitude of contractors, journeymen and dealers in materials, under the supervision of an architect, for the owner of the land on which the building is erected, who is also the employer of the architect; and it speaks more for the general honesty and good faith with which such operations are carried on, than for the prudence of the persons who engage in them, that there are hardly any two classes of men whose legal status, in regard to other people, is so undefined as that of architects and builders. Architects, as a rule, are very peaceful, and fully appreciate the desirability of settling disputes out of court. Possibly, the very fact that they are, as a rule, so ignorant of building law is a reason for the fact that so few of them ever appear as litigants, by an inversion of the principle that whoever goes around with a chip on his shoulder is very apt to find some one to knock it off. But for the protection of the vast interests which are often involved in a building contract, more, especially, than for a possible invasion of his particular and personal rights, the architect ought to be sufficiently posted in legal matters to give an owner a very clear idea of exact rights and duties in relation to the builder and the building. This knowledge is what Mr. Clark's work undertakes to supply, and it need hardly be said that the work is thorough in the extreme. It is the result of long and, doubtless, tiresome search through the musty records of legal decisions, inv

No one can read the volume without being impressed with the constantly-recurring fact, stated in various forms, that the law, though it sometimes seems oblivious to an architect's personal rights, nevertheless recognizes the tremendous responsibility which is placed on his shoulders, and requires that the architect must be honest, must be just, must understand his business, and must attend to it. While these conditions are fulfilled, his duties are very clear and the liability of his being involved in a law-suit is comparatively slight. It is interesting to note, by the way, that the architect's duties are not to be ascertained by the caprice either of the independent owner or even by a jury, but are matters to be determined by evidence and deal with facts. The mutual duties of the contractor and the owner and the very broad subject of contracts occupy a very considerable portion of the volume, but the most interesting chapters in the book are those which deal with the relative duties of the architect. The kind of builder who undertakes to interpret an architect's plans literally, even when they do not agree, and then calmly saddles all the blame upon the architect or his draughtsman, is a type so familiar to most architects, that it is interesting to note decisions which have been rendered by two of the highest courts in Illinois, that "a contractor is not excused for not understanding the plans. His undertaking to erect a building in accordance with certain drawings and specifications implies that he does understand them, and he cannot escape liability on the ground that he exercised ordinary skill and care to understand them, and failed to comprehend them." Furthermore, the author very properly dwells at length upon the serious side of an agreement which is so often entered into by a builder to do a piece of work to somebody else's satisfaction. Builders are very apt to reason that this simply implies reasonable satisfaction; that if the architect becomes overexacting, they can cooly ignore his individual pr

if he stipulates that the object shall be satisfactory to himself or some other specified person, it must be made satisfactory before he is obliged to accept it, and he need not give any reason for his dissatisfaction."

Another decision which will interest many architects who have had to do with irresponsible contractors, is quoted from the United States courts from cases in which the builder defaulted on his contract, the owner subsequently completing the work and charging the expense thereof to the account of the original contract. It was held that "if completion costs less than the balance of the contract price, the contractor cannot recover the difference." And in other instances, case after case is cited to show that if a builder enters into a contract to do a certain thing, he can have no remedy in a court of law against non-payment by the owner until that specified

thing is accomplished.

Decisions, such as the preceding, might be quoted indefinitely from the book, which is full of valuable legal illustrations. But they will serve to illustrate, at least, a few of the practical lines on which the subject has been considered. The final chapter deals with forms of contract, and is, in some respects, the best written portion of the whole work. The standard contract which has been prepared by the joint committee of the National Master Builders' Association and the American Institute of Architects, while approved of in the main, is subjected to some very searching criticism. The objection which, doubtless, nearly all architects have found in their n minds with this contract, is that the American-Institute-of-Architects element is very feebly represented, and that the contract, as it stands, is more truly an embodiment of the builder's side of the as it stands, is more truly an embodiment of the builders side of the subject than of the architect's or the owner's. One of the clauses of the "standard contract" provides that all the work to be done must be not only specified, but must be shown on the drawings which form a part of the contract. Now it is manifestly, as Mr. Clark very truly says, impossible to show on a drawing all the details of a building and any agreement which binds the builder order. of a building, and any agreement which binds the builder only to carry out what he chooses to assume to be shown by drawings less than one two-thousandths and often only about one ten-thousandth the full size, puts a premium on rascality. There seems to be a fair reason why the drawings should set forth, in detail, all the work that is required to be done, but as a matter of fact this is a physical impossibility in a great many carry indeed. fact, this is a physical impossibility in a great many cases; indeed, in instances where the most rigid contract is desirable, it often becomes the most difficult to exactly define all the minutiæ of the becomes the most amount to exactly define an the limiting of the building structure. The intent of the Master Builders' contract is good, but most architects would agree with Mr. Clark that the contract should refer to work shown "or" specified, instead of "and" specified. Again, there is an objection which probably nine owners out of ten would raise to the form of contract, if their attention were really called to it, and that is the clause which provides that "the work shall be done to the satisfaction of the architects acting for the purpose of this contract as the agent of the said owner." Mr. Clark very pertinently suggests that the architect should avoid as far as possible acting in the owner's place, and that while young architects like a client who will leave everything to them, experience shows that it is a good deal better to have the duties and responsibilities of client, architect and builder as distinct as possible. Accordingly, there is not the slightest necessity for an architect to be recognized as the agent of an owner under any circumstances whatever. He is more independent in his judgment, less obligated to consult the fancies of an irrational client and far freer to act in work shall be done to the satisfaction of the architects acting for to consult the fancies of an irrational client and far freer to act in his practical function of arbitrator between the two interested parties, if he considers himself simply as the architect and does not undertake to represent either party in any other capacity. Few clients would submit to being told that the architect is their agent, and that, therefore, anything done by the architect is binding upon the owner, whether he sanctions it or not. This, however, is the plain effect of the wording of the clause in the contract form, and it is very properly objected to.

There is a third very radical objection to the "standard contract" in Mr. Clark's opinion, and that is in regard to the arbitration clause. If the owner, the architect and the builder cannot settle their differences among themselves, it is very much to be doubted whether three other parties would have any better success. It has been our fortune to be involved in several referee cases, and in every instance, the decision on all fine points was carried by the referee who had the ablest tongue. We remember particularly a case in New York, involving upwards of one hundred thousand dollars, in which a decision was given in accordance with the ruling of the architect, simply because the referee whom the architect and the owners had appointed absolutely refused to accept the view of the other two referees, and was able to persuade them to come to his view of thinking, in spite of the facts. Accordingly, as Mr. Clark very properly says, if the three parties in interest cannot agree, the best way is to fight it out in the courts, and avoid entirely a decision by arbitrators.

The book contains, beside the "standard-contract" form, two others; one, a short form drawn up for private use, and a third which was prepared by a lawyer of great experience in building matters, in consultation with his architect, for use where the interests involved were too important to leave any point vague or unconsidered. The third form seems to be admirable. Doubtless, the builder would urge the same species of objection against it which has been cited against the "standard" form, namely, that it is prepared in

^{1&}quot; Architect, Owner and Builder Before the Law." A summary of American and English decisions on the principal questions relating to building, and the employment of architects, with about eight hundred references. Including also practical suggestions in regard to the drawing of building contracts and forms of contract suited to various circumstances. By T. M. Clark, Fellow of the American Institute of Architects. New York: Macmillan & Co. and London, 1894. All rights reserved. Price \$3.

the interest of the architect. But it surely covers the ground in a most thorough manner, and, assuming that the intentions of all parties are honest, it limits the duties and rights in a much more

No architect can afford to be without a copy of Mr. Clark's book. It is not only the only work of its kind in existence, but it also supplies a long felt need so aptly and appropriately, backing up all legal statements by direct quotations from the law records, as well as direct reference to the actual cases that armed with this vol. by direct reference to the actual cases, that, armed with this volume, an architect can be able to define the position of the three

parties involved in a building contract to such an extent that he can, at least, feel his client's interests are legally safe in his hands.

In spite of Mr. Ruskin's severe and unmeasured strictures on Canaletto, he still remains a painter whose works are of great interest, especially so to the architect, and the addition to the series of "Les Artistes Célèbres" of a volume devoted to him was well

M. Adrien Moureau is the author of the book, which is illustrated by a number of reproductions from etchings by Canaletto, and from a series of dry and formal engravings after him by Visentini. There is, unfortunately, no copy given of the fine (and only) Canaletto in the Louvre, the "View of Santa Maria della Salute," one of

his best works.

Antonio Canal, called Canaletto, was born at Venice, in 1697, and studied under his father, who was a decorator and scene painter. In 1719 he went to Rome, where he spent some time in copying the antiquities of the city and then, returning to his native place, occupied himself in painting those views of Venice by which he is so well known. In 1716 he visited England, where he lived two years, producing a number of pictures of scenes in and around London, many of which are still treasured in British collections. Canaletto died at Venice in 1768, his style and subjects being closely followed by his pupils, Bellotto and Guardi.

The churches and palaces, the canals, quays, bridges and lagoons of the fallen Queen of the Adriatic almost exclusively engrossed his brush, and independently, therefore, of the art value of his works, they possess a distinct historic worth, which time cannot but enhance, as records of places and structures many of which have been destroyed or changed. Although he worked in the decadence of Venice, when her great painters and her power had both departed, Canaletto's name will always be associated with that of the wondrous water-city, to the illustration of whose architecture all his talent was given.

A FITTING companion to the biographies of Moreau and Cochin, previously published, is M. Moureau's "Les Saint-Auhin," the latest issue in this series, which treats of the various members of this artist-family in sufficient detail and describes their work in

painting, designing and engraving.

Gabriel Germain de St. Aubin, brodeur du Roi, had five sons, of whom four were artists—Charles Germain (1721-1786); Gabriel Jacques (1724-1780); Louis Michel (1731-1779); and Augustin (1736-1807). Products of the eighteenth century in France, most of whose work was done in the reign of Louis the Well-beloved, their art is graceful, lively and refined, in keeping with that

elegantly immoral time. The most important members of the St. Aubin family were Gabriel and Augustin, of whose labors, both original and following those of others, numerous reproductions are given. In them we see the gay and gallant Parisians at their balls, concerts, exhibitions, promenades and other amusements, or look upon the features of many charming women, among them the Pompadour herself and the pretty wife of Augustin de St. Aubin. Including also many admirable designs for head and tail-pieces, vignettes, monograms and the like, the illustrations of the book are to be commended, though the reader who knows his St. Aubin will find them lacking in presentations direct from the original drawings, such as those pertaining to the rich collection of M. Edmond de Goncourt, some exquisite examples of which were reproduced in his superb work on eighteenth-century art in France.

The publications of the Librairie de L'Art have lately been augmented by the issue, in parts, of "Dessins de Maitres Anciens et Modernes," which can be cordially recommended to art lovers. It Modernes," which can be cordially recommended to art lovers. It contains many excellent copies, folio-size, of drawings by acknowledged masters, printed in various tones and published at a moderate price. Among the work of the old painters, we find examples after Raphael, Andrea del Sarto, da Vinci, Rembrandt, Rubens, Van Dyck and Watteau, while the moderns represented include Constable, Millet, Rousseau, Francais and Delaunay. In a collection whose scope reaches from the severe line of Albert Dürer to the soft contours of Boucher and Fragonard, it is not easy to particularize, but we will instance the reproduction of a study in red chalk, of an old man by Rembrandt, as alone worth the price of the part which old man by Rembrandt, as alone worth the price of the part which contains it, which is but two francs.

EVERYBODY has seen and admired the color-prints of the Japanese - those charming fancies which have floated by millions over seas to

aid in brightening our prosaic lives — but few know how they are produced. For any who care to learn, the Smithsonian Institution has published a pamphlet entitled, "Japanese Wood-cutting and Wood-cut Printing," by Mr. Tokuno, Chief of the Bureau of Engraving and Printing of the Ministry of Finance at Tokio. It gives a careful and interesting account of the tools and methods of the Japanese woodcutters and printers, is furnished with a number of illustrative drawings by a Japanese artist, and is edited by Mr. S. K. Koehler, of the Boston Museum of Fine Arts, who is also Curator of the Section of Graphic Arts at the Smithsonian.

The pamphlet is significant as showing that the Institution now

The pamphlet is significant as showing that the Institution now pays more attention to art matters in its publications than formerly, when they were almost entirely devoted to science.



T-SQUARE CLUB OF NEW YORK.

HE regular November meeting of the T-Square Club was held the 1st instant. The studies made by the members who are in the Inter-club Competition were on exhibition and were criticised. The award for summer sketches was made as follows: First Mention, Wm. L. Price; Second Mention, John Stewardson; Third Mention, G. G. Basset.

The programme for the next monthly competition was read, as

follows

"A memorial tablet to Oliver Wendell Holmes, to be placed on the wall of a large church. The tablet to be of any material and style, the greatest dimension not over six feet. The inscription will be given. Required: one elevation rendered with the brush. Scale: three-inch to the foot."



Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.

HOUSE OF DR. HARTE, 1503 SPRUCE STREET, PHILADELPHIA, PA. MESSRS. COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA,

[Heliochrome issued with the International and Imperial Editions only.]

SWEDENBORGIAN CHAPEL ON THE NORTHWEST CORNER OF LYON AND WASHINGTON STREETS, SAN FRANCISCO, CAL. MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL.

HE walls of the chapel are built of selected common brick, mixed with "klinkers." The roof is covered with tile made in the shape of the old Mission tile. The bulkhead wall is concrete, finished in light-cream color. The interior of the church is finished in cedar with trusses hewn from Madrone trees with the bark left on. In the small belfry hang two silver bells. Adjoining Adjoining the chapel is a residence built in corresponding style. Is in the passageway between the church and the house.

MAIN ENTRANCE TO POWER-STATION OF THE WASHINGTON AND GEORGETOWN RAILWAY, WASHINGTON, D. C. MR. W. C. ROOT, ARCHITECT, KANSAS CITY, MO.

MESSRS. OFFICE-BUILDING FOR JACOB BINZ, HOUSTON, TEX. LOREHN & FRIZ, ARCHITECTS, HOUSTON, TEX.

MATERIAL to be: granite plinth course, of Burnett, Texas, gra granite; first story, Chico sandstone; upper structure, Roman buff brick, sandstone sills and terra-cotta trimmings; cornice, copper. Cost, complete, \$125.000. Slow-burning construction. Two hydraulic passenger elevators, one freight elevator. First story used for store-rooms; second, third, fourth and fifth for offices, and sixth for lodge-rooms and clubs. Heated with hot-water with electric-light plant in basement.

HOUSE FOR DR. G. C. CLARKE, NIAGARA FALLS, N. Y. MESSRS. BLOCK, BARNES & ORCHARD, ARCHITECTS, NIAGARA FALLS,

HOUSE FOR W. C. STURGIS, ESQ. MESSRS. STURGIS & CABOT, ARCHITECTS, BOSTON, MASS.

HOUSE FOR -, SAN ANTONIO, TEX. MR. J. RILEY GORDON, ARCHITECT, SAN ANTONIO, TEX.

4" Japanese Wood-cutting and Wood-cut Printing," by T. Tokuno. Washington: Government Printing-office, 1894.

Antonio Canal," par Adrien Moureau. Paris: Librairie de L'Art, 1894
 Les Saint-Aubin," par Adrien Moureau. Paris: Librairie de L'Art, 188
 Dessins de Maitres Anciens et Modernes." l'aris: Libraire de L'Art.

[Additional Illustrations in the International Edition.]

BEDROOM IN THE HOUSE OF E. F. SEARLES, ESQ., GREAT BAR-RINGTON, MASS.

[Copper-plate Etching.]

PAVILION OF THE AMERICAN BELL TELEPHONE CO., WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MESSRS. FEHMER & PAGE, ARCHITECTS, BOSTON, MASS.

[Gelatine Print.]

WITH this plate we end the publication of views of the World's Fair structures, which we planned to publish during the existence of the Fair itself while interest in the Fair was greatest. The unjustifiable negligence of the "official photographer" made this impossible, however, and whatever have been our shortcomings in the matter should rest on his shoulders, not on ours.

A SHOP-FRONT, PRINCE'S STREET, EDINBURGH, SCOTLAND. G. WASHINGTON BROWNE, ARCHITECT.

NEW POLICE BARRACK, CHAPELIZOD CO., DUBLIN, IRELAND MR. HOWARD PENTLAND, ARCHITECT.

THE drawing of the new Police Barrack was hung at this year's exhibition of the Royal Hibernian Academy of Arts. The site adjoins the Phænix Park, between a portion of which and a bend of the river Liffey lies the little village of Chapelizod. It is intended to have communication with the Phœnix Park as well as with the road through Chapelizod, both for the supervision of the park and to enable the constables who are off duty to avail themselves of the pleasures of its 1,700 acres. The contract, exclusive of the sewage disposal, the boundaries and approaches and the formation of the parade-ground, has been let to Mr. John Pemberton for 3,150%. The ground-floor walls and the chimneys will be finished with first quality red bricks. The upper portion of the walls will be plastered and the roof covered with red Ruabon tiles.

THE PORTLAND ARMS TAVERN, 60 HIGH STREET, ST. JOHN'S WOOD, LONDON, ENG. MR. R. A. LEWCOCK, ARCHITECT.

This building, which is the first property rebuilt under the new leases, has been erected in High Street, St. John's Wood. It is a landmark and an example of the elaborate construction adopted at the present date for licensed property. The upper fronts are of Portland stone with red brick facings.

The lower fronts and integral fittings are of polished walnut and oak largely religiously with ternal fittings are of polished walnut and oak, largely relieved with brilliant cut and bevelled plate-glass.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; do they hold themselves responsible for opinions expressed by their correspondents.]

WOOD'S HOLE.

TO THE EDITORS OF THE AMERICAN ARCHITECT: -

November 10, 1894.

Dear Sirs, — Anent the lovely plate, showing the hall in the Edgar-Harding home, may a student of place-names say that the United States spelling of the town is Woods Holl, without the apostrophe? The United States Board on geographic names does these things well, and may be honored.

C. W. E.

[IT has evidently escaped our correspondent's notice that early in the current year, the authorities were convinced by incontrovertible testimony that when they changed "Wood's Hole" to "Woods Holl" they had made a mistake, and accordingly restored to the water-way and the riparian village its original and time-hallowed name.— Eds. American Archi-



BOSTON, MASS. — Exhibition of the Works of Adolf Menzel; also, Drawings by John Trumbull: at the Museum of Fine Arts, in October and

November.

Pastels by J. Appleton Brown: at Doll & Richards, 2 Park St., opened November 16.

Chicago, Ill. — Seventh Annual Exhibition of American Oil paintings and Sculpture: at the Art Institute, October 29 to December 17.

NEW YORK, N. Y.—Loan Exhibition of Portraits of Women: at the National Academy of Design, November 1 to 24.

Loan Exhibition: at the Metropolitan Museum of Art, New North

Wing opened November 5.

Ehrich Collection of Old Masters; also, Group Exhibition by American Painters — William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West

57th Street.

Zschille Collection of Arms and Armor: at Tiffany & Co.'s, Union

Square.

Exhibition of Early Printed Books from the Bruce Collection: at the Grolier Club, November 9 to 24.

Exhibition of Du Maurier's Original Drawings for "Trilby": at Avery's Art Galleries, November 17 to December 8.

Philadelphia, Pa. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 16.



Porous Glass.—The latest hygienic craze in Paris is the use of porous glass for windows. This is declared to possess all the advantages of the ordinary window framing, and, while light is as freely admitted as through the medium of common glass, the "porous" further admits air, too, the minute holes with which it is intersected being too fine to permit of any draught, while they provide a healthy continuous ventilation through the apartment.—Philadelphia Press.

Luminous Sulphurets.—According to M. Jacksh, a Moravian chemist, there are four sulphurets which become luminous after exposure to daylight, viz: the sulphurets of calcium, strontium, barium and zinc. The sulphuret of barium gives a faint, yellowish glow and those of barium and zinc a greenish glow, the latter compound being rare and difficult to obtain. Sulphuret of calcium is the substance commonly employed for commercial purposes, as luminous paint, etc. The others possess a phosphorescence which is but feeble and short-lived.—Invention

EARLY BURYING-GROUNDS.—In ancient times, burial was always without the walls of cities and towns. Indeed, before the time of Christianity, it was not lawful to bury the dead within the cities, but they used to be carried out into the fields and there deposited. About the end of the sixth century, St. Augustine obtained of King Ethelbert a temple of idols—used by the king before his conversion—and made a burying-place of it, and St. Cuthbert afterwards obtained (A. D. 752) leave from the Pope to have yards made to the churches suitable for the burial of the dead.—Westminster Gazette.

The Cremation of Garbage. — The Inventive Age notes that there are now fifty-five towns and cities in England which destroy their garbage and solid refuse by burning, using an average of about ten furnaces each for that purpose. The combustion of the material is used for the generation of steam, by which the streets are electrically illuminated, and other cities are reported to be considering the propriety of reducing their municipal expenses by this means. The Livet, the latest introduced method, is stated to burn on an average three hundred and thirty-one pounds of rubbish per hour for each square foot of gratesurface, with an evaporation of 4.08 pounds of water for each pound of rubbish consumed. In this way science is showing what profit there is in what has been regarded as waste and filth, to be used in contaminating public drinking-water or getting rid of it in some other way.

A Mammoth Convertible Theatre. — The new theatre which is in process of construction at Buenos Ayres, bids fair, on completion, to be the largest in the world, besides embodying other unique features. Its mammoth capacity will afford sitting accommodation for 5,000 persons. The structure is further so planned as to enable carriages to deposit their occupants on the level of the grand tier of boxes, as well as the ground floor, while lifts will be provided for the benefit of all seat-holders in the upper part of the house. The most novel feature, however, of the new theatre is the arrangement by which, in a brief space, the pit and stalls can be converted into a circus or racing-track; so that on the same day, or even on the same night, tragedy may give place to a bull-fight, or opera to a bicycle or foot race. Further means are provided by which the ground-floor of the house can be turned into a mimic lake for the benefit of swimming or other aquatic performances. — Invention. - Invention.

Apartment-houses at Pompeii.— Our architects should not forget that the modern system of hotels and apartment-houses on a vast scale is mere child's play compared with the practice of the ancients in the same direction. Recent excavations at Pompeii have unearthed some enormous buildings, of such beauty and solidity in architecture, such perfect drainage, and such provisions for health and comfort, as to fill all who have seen them with astonishment. These newly-discovered buildings contain thirty or forty immensely-spacious apartments on the first floor, and as many on the second. The rooms looked out on a rotunda nearly forty feet long; courts supported by columns surround the bedrooms, which opened upon large, ornamental gardens with fountains. Provision for light and air was made upon the most extensive scale. On the second floor were found evidences that there were suites of rooms built upon the flat plan of to-day. In fact, the revelations made by the exhumers at Pompeii show that place to have been one of the most wonderful watering-places for splendor, comfort, health and enjoyment, and gave every evidence that floor-renting, like many other modern improvements, is not a new thing under the sun. We have in preparation a short series of articles on Roman housebuilding, in which some of the systems and materials used will be illustrated. — Illustrated Carpenter and Builder. Illustrated Carpenter and Builder.

ROTHENBURG. —Rothenburg possesses the charm which M. Paul Bourget describes as the characteristic of certain towns in out-of-theway corners of Italy; it has proved itself refractory in face of an all-levelling cosmopolitanism. Fashion, for once, has been daunted by a power stronger than its own, the spirit of the place has repulsed the spirit of change, and the Rothenburg of to-day is identical in outward aspect and features with the Free City of three hundred years ago. During those centuries, not a new house has been built within its massive old walls, which, with their picturesque and varied towers and bastions, girdle the little town, and protect it from innovation. Though not on the direct line to any place, Rothenburg may easily be reached from either Wurzburg or Nuremberg. A primitive little railway leads up from the junction of Steinach, through rich orchardlands, and flowering fragrant meadows, fringed with pine woods, to a station outside the walls of the town. At the first glimpse of the walls and towers — rivals to those of San Gemignano itself — one is conscious of a certain vulgarity and modernity in approaching such a place by means of nineteenth-century appliances of steam and locomotion. A litter and a procession of sumpter mules would seem a more fitting way of entering such a town than to rattle in an hotel omnibus under the arch of the old Roderthor, with its time-worn massive towers, and its double walls enclosing a deep trench, grass grown, and in spring a mass of flowering fruit-trees. But the omnibus is the one concession to the modern spirit of travel. There is nothing about the roomy, old-fashioned inn to suggest Cook and the beaten tracks of tourists. Like every house in the quaint, old-world street, the "Hirsch" has an independent character, an artistic quality all its own. For that is one of the many charms of Rothenburg. Not only is it in itself unlike every other place, unlike anything, in fact, but the background of an Albert Durer woodcut, but every house in it is unlike its nei but nothing in real life to approach its many-sided picturesqueness, its unique mediaval character. One feels oneself an anachronism walking unique memevai character. One feels oneself an anachronism walking up the steep, irregular street, lighted by old iron lanterns swung on chains from one house to its opposite neighbor. The effect of modern travellers straying through the streets was much as if a spectator from the stalls found himself, by some inadvertence, in modern dress on the stage at some old fashioned play when the curtain went up. — Providence Journal.

RAMESES AND ARE-SIMBEL. — It is such a surprising and comfortable fact that the authorities, for a wonder, practically agree as to Rameses's date — they only varying some fifty years, which in matters Egyptian is a mere nothing. A man who reigns sixty-seven years, lives to be just one hundred, and begets one hundred and seventy children, is likely to leave a pretty big footprint in the sands of time. His characteristic way of proclaiming his achievements, as it were with a foghorn, all up and down Egypt, makes him very precious to the historian. It is your modest Cincinnatus kind of hero who does a great thing, and then, diving back into obscurity, wants so much researching that he becomes a trial even to a German savant. Directly Rameses had achieved a conquest, he could not rest till he had carved the record of it on every spare wall space from Memphis up to Abu-Simbel. Moreover, he kept a poet-laureate, one Pentaur, who wrote a glorious poem in praise of Rameses, and this is cut in the walls of Luxor, on the Ramasseum at Thebes, at Abydos, and, of course, at Abu-Simbel. It was about the year 1330 n. c. that Rameses began his temple at Abu-Simbel. It was a superb idea, worthy of his great mind; he simply took a vast hillside, and hewed his temple out of the heart of it. Nothing less than a façade one hundred and twenty feet long and one hundred and five feet high would satisfy the imperial architect, and there he set the four immortal warders, his own royal likeness four times repeated. What must they have been in their unspeakable dignity on the great day when all Egypt journeyed to the consecration of the temple! Even now, after three thousand years, wrecked and ruined as they are, eternal peace sits upon their lips, and, defying the centuries, they still keep watch across the desert sand, gazing with untroubled eyes into the very heart of the dawn. — The Cornhill Magazine.

THE POVERTY OF OXFORD. — "Oxford's Poverty" is the theme of a piteous letter from the librarian of the Bodleian. He points out The Poverty of Oxford.—"Oxford's Poverty" is the theme of a piteous letter from the librarian of the Bodleian. He points out that the Bodleian Library, one of the five great libraries of the world, and whose income, according to Dr. Stubbs when a curator, ought to be not less than £15,000 a year, does not get as much as £9,000. Yet it is more than half as large as the British Museum, which, after deducting expenses to which the Bodleian has nothing analogous, has an income of £65,000. The Bodleian is supposed to receive £1,000 a year from All Souls', but it does not get a farthing. And so on, and so on. The fact is that our universities are exceedingly poor. Cambridge last year was stated to be insolvent; and if Oxford is not as bad as that, it is only by starving many old institutions. Yet, more and more demands are made upon them — for university-extension, new schools, new teachers. If wealthy men would occasionally leave money to the university, as Messrs. Johns Hopkins, Stanford, Childs have done for the more fortunate universities of America, all would be well. But they don't, sighs Mr. Nicholson. And he casts covetous eyes at the four millions just coming into the possession of a gentleman who makes £11,000 at one sweep with a race-horse. Query: Should the university sell its real estate and try to make some money on the turf!—St. James's Gazette.

LIGHTING A TENTILE MILL.—Some months ago, an English manufacturer made a number of experiments to determine the best method of illuminating his cloth-mills. Gas jets, incandes ent lamps and arc-lights were all tried and found wanting, because they either failed to give light enough, gave too much light or cast heavy shadows. Finally, a Continental idea was adopted. The walls of a

room were painted white, and under each of a number of arc-lights was suspended a reflector which threw all the light up to the white ceiling, from which it was reflected to the room below. This system was successful from the outset, and has attracted considerable attention among English weavers. It was examined by Darius L. Goff, of the Goff braid mill in Pawtucket, and he has adapted it to light a braidingroom fifty feet wide and two hundred feet long, only seven arc-lights being used for the purpose. The room is admirably adapted for such a system of illumination, as there are no columns in it and but a few - Philadelphia Press.

The Churches of Provence.—No Provenceal churches of later date than St. Trophime demand attention in a sketch like this. Along the seacoast, Saracenic invasions had fostered, in very early days, a fortified type of church, and this was brought into greater prominence by the Albigensian wars and the constant attacks of Mediterranean pirates; even the church which enshrines the bones of the holy Marys has military-looking walls and machicolations. But, common to all the southerly parts of France, fortified churches may best be studied to the westward of Provence; and when Northern Gothic penetrated the land, the attempt to unite its characteristic ideas with Provencal ideas in regard to ground-plan and proportions, produced results which are interesting rather than attractive. The pointed work of Provence has a distincter local flavor than that of most of the other provinces of France, but it appeals to the lover of architectural history more than to THE CHURCHES OF PROVENCE. - No Provençal churches of later France, but it appeals to the lover of architectural history more than to the lover of architectural beauty. — Mrs. Schuyler Van Rensselaer in the Century for November.

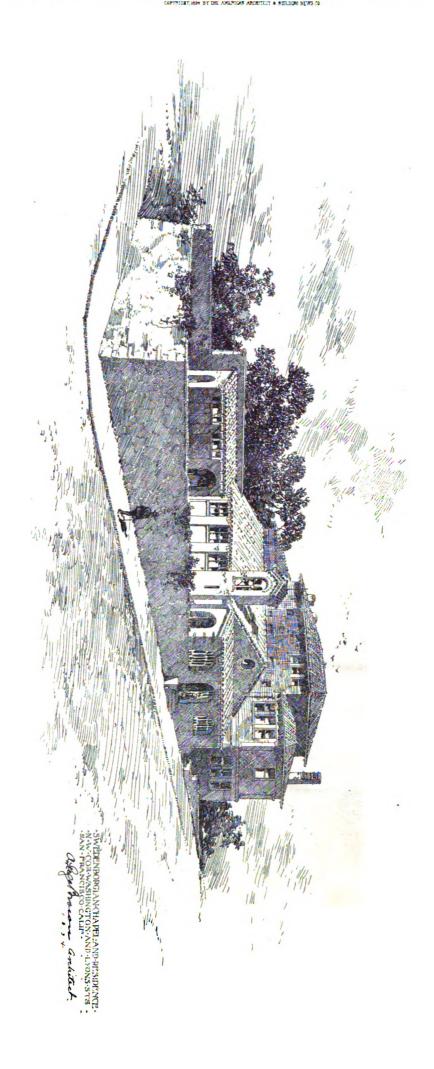
An Old Chinese Water-clock. - In another tower, reached by a AN OLD CHINESE WATER-CLOCK. — In another tower, reached by a flight of rickety stairs, is the water-clock that has measured time for the Cantonese for nearly six hundred years. Four copper pots, crusted and dingy with age, stand raised on steps, each one above and slightly behind the other. In the base of the three upper pots are lips, over which, from a pinhole-outlet, the water filling the top vessel trickles drop by drop, and passing through each of the first three, drips finally into the fourth, or lowest. Through a slit in the cover of this vessel is seen a graduated brass scale attached to a float below, which rises with the increasing volume of water. Every twenty-fourth hour, the water accumulating in the lowest pot is transferred to the uppermost, and the scale sinks down with the float, only to rise again with the hours as the vessel slowly fills up. — "In the City of Canton," in the November Century.

FROST AND PORTLAND CEMENT. — A method for preserving Portland cement from frost, invented by Herr R inhofer, consists in the addition of crystallized soda dissolved in water. The cement-mortar is composed of one litre of Portland cement, one of lime, and three litres of river sand, mixed with a solution of one kilogramme of soda in three bitres of water (one litre equals one and three-quarters pints, and one kilogramme equals 22 lbs). After exposure for fourteen and a half hours to a low temperature, the maximum intensity of which attained thirty-one and a half degrees Cent., the test sample was placed in an oven, where it remained for three hours, after which no deterioration was observable. — Illustrated Carpenter and Builder.

A Memorial to Boadicea. — Much interest has lately been manifested at the decision of the Parks Committee of the London County Council to carefully open the tumulus at the top of Parliament-hill Fields, which, according to tradition, is the burial-place of Queen Boadicea. When the committee decided to undertake the investigation, it occurred to Mr. J. I. Thorneycroft, of Chiswick, in connection with the undertaking, that his father, the late Mr. Thomas Thorneycroft, devoted fifteen years of his life to a gigantic group, representing the British Warrior Queen, supported by her two daughters, preparing to go into battle against the Roman legions in a chariot drawn by two horses. This, Mr. Thorneycroft considered, would be a suitable occasion to make a present of the statues to the County Council for erection in some prominent position in London. As soon as the Parks Committee was informed of Mr. Thorneycroft's intention, a small sub-committee, consisting of Mr. W. B. Doubleday, vice-chairman of the committee; Mr. Andrew Arter and Mr. W. J. Bull was appointed to view the work, and report to the Council upon it. These gentlemen yesterday visited the house of Mr. Thorneycroft at Chiswick, and examined the plaster cast, which, for the last ten years, has been preserved in a house specially erected to contain it. The group is of gigantic proportions, the statue of Boadicea alone being fully ten feet examined the plaster cast, which, for the last ten years, has been preserved in a house specially erected to contain it. The group is of gigantic proportions, the statue of Boadicea alone being fully ten feet in height and the chariot eight feet in width. Attached to the wheels are long war-scythes. Mr. Thorneycroft explained that his father had especially designed the group for casting in bronze. The cost of casting would amount to about £0,000, and he was prepared, should the Council not see its way to the expenditure of all that sum, to open a voluntary subscription by a donation of £100, in order to insure that the undertaking should be carried out in a proper manner. He also suggested that a suitable site would be the well-known mound on Parliament-hill Fields, or on one of the other spots in London which is traditionally associated with the British Queen. After a long examination, the committee expressed their gratification at the public spirit which characterized Mr. Thorneycroft's action, and their great pleasure at the excellent way in which Mr. Thomas Thorneycroft's work had been executed and preserved. Before advising the County Council as to what action should be taken, they considered that it would be preferable if some of the other members of the Parks Committee should examine the work, so as to obtain their opinion as to the most suitable spot for erection, and the cost of the casting. During the lifetime of the late Mr. Thomas Thorneycroft considerable interest was taken in this group by the Prince Consort, who frequently made inspections of it. The two horses in the chariot are life-size, and so as to assist Mr. Thorneycroft in his work, the Prince Consort especially sent, from time to time, horses from the Royal stables. — N. Y. Trib-nue, Norember 4, 1894.



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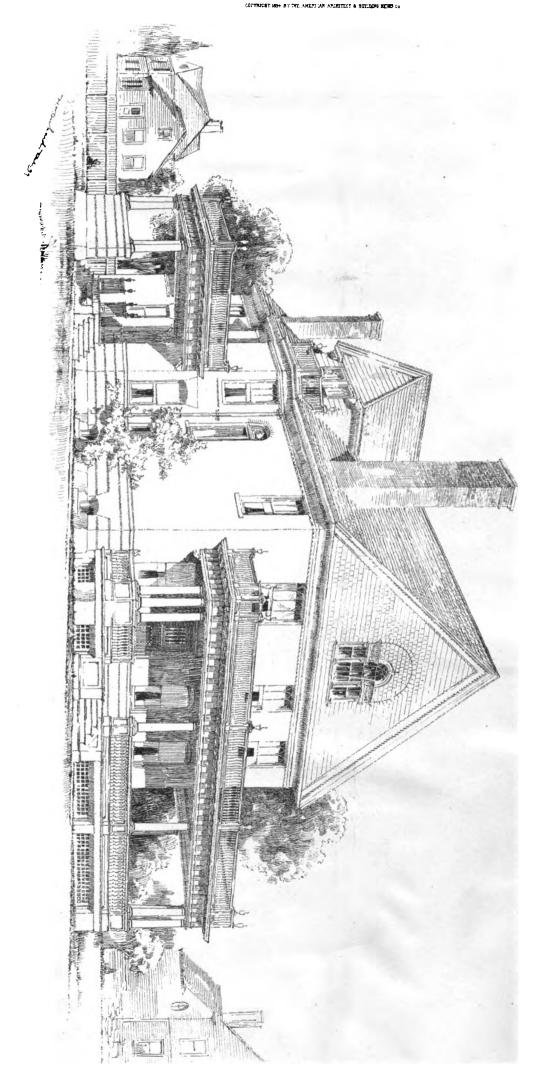
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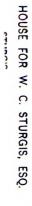
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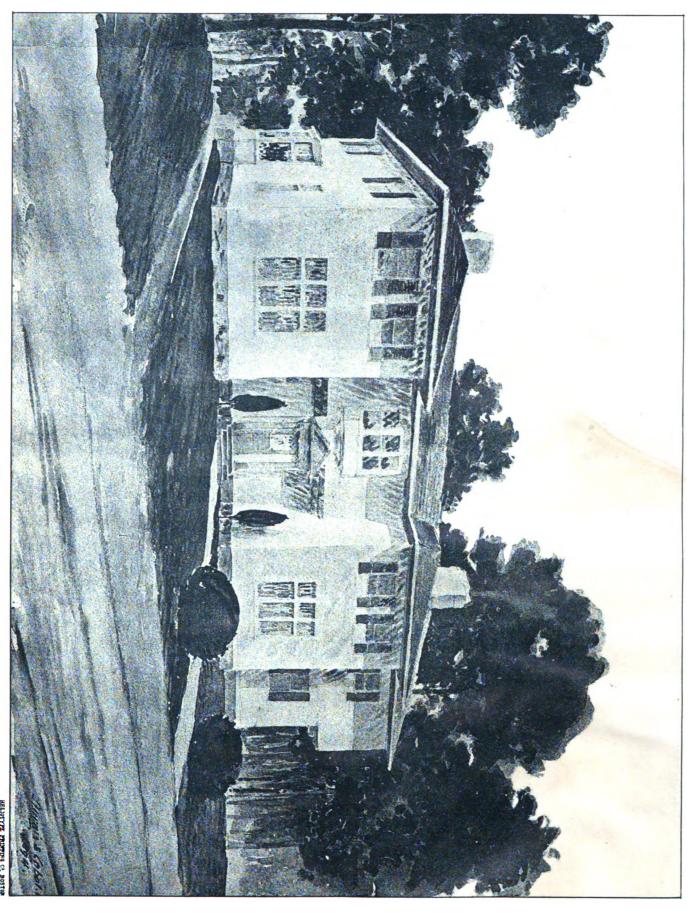


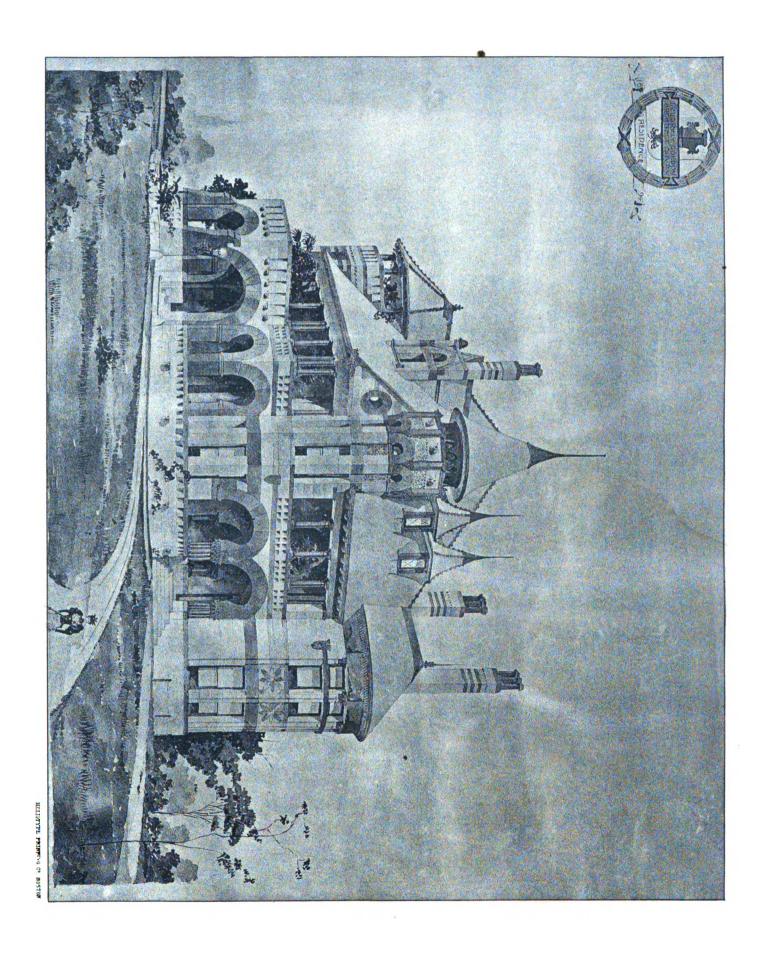


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Entered at the Post-Office at Boston as second-class matter.

NOVEMBER 24, 1894.



The Report of the United States Strike Commission on the

ARCHITECTURE AT THE UNIVERSITY OF ILLINOIS.

ILLUSTRATIONS: —

The Daniel Peirce House, Portsmouth, N. H.—The Houses [Restored] in the Vicar's Close, Wells, Eng.—The Chapel, Outside and Inside, Wells Cathedral, Wells, Eng.—The College Arms Hotel, De Land, Fla.

Additional: Central Entrance of the Union Station, Boston, Mass.—The Academy of Design, New York, N. Y.—Design for a Village Church.—The Railway-station, Dusseldorf, Germany.—Plan of the Same.—Queen's Hall, Langham Place, London, Eng.: Doorway.—Presbyterian Church of England, Bromley, Kent, Eng.

Communications: —
Samples Wanted. — A Question of Charges.

TE received some time ago, through official kindness, an advance copy of the long-expected Report of the United States Strike Commission on the great Chicago strike of last summer, with a request not to make use of it until a certain date. That date having arrived, we are glad of the opportunity to lay before our readers some of the interesting statements and conclusions which we find in it; premising, however, that we do not agree with all the conclusions, and that some of them do not appear to us justified by the statements of fact. The Commission, in its investigation, began by inquiring into the condition of affairs at Pullman before and during the strike, and gives an interesting picture of the great industrial city. In this picture, the Commission represents the town of Pullman as a piece of soulless mechanism, by which dollars are pitilessly extracted from "Labor," to add to the dividends of "Capital." The rents charged for the houses are, it says, twenty-five per cent higher than those for which the same accommodation can be hired elsewhere, but the men, although nominally not required to live in the houses owned by the Company, do not, practically, feel at liberty to live elsewhere, because they think that, if work slackens, the Company will discharge first the men who do not occupy its houses.

O doubt, a system by which a great corporation extracted twenty-five per cent more rent for its houses than they were worth, by refusing to hire any man who did not live in them, would be oppressive; and the Commission is, perhaps, in them, would be oppressive; and the Commission is, perhaps, right in presenting the apprehensions of the men as a basis for condemning the Pullman system on theoretical grounds; but the facts, as gleaned at intervals from other parts of the Report, by no means bear out the repulsive picture which imagination has suggested. Whatever the Company's tenants may have thought, and told the Commissioners, the pay-rolls where as the Report itself informs us that a large number of show, as the Report itself informs us, that a large number of the best, and best-paid, workmen in the shops live outside of the town, and do not suffer any harm at the hands of the Company in consequence. In the same way, the Commissioners offer us a doleful description of the "attractive church and parsonage," which are often not occupied, "because the rental required to be paid is higher than any church society is willing to pay to obtain the gospel privileges to be thereby secured"; as if the Pullman Company were to blame for depriving its employes of "gospel privileges" by building too handsome a church, or declining to rent it for whatever sum the worshippers chose to pay; and they speak in a melancholy vein of the "tasteful library of books," selected and cared for by the Company, for the use of which three dollars a year is

charged. But this is not the worst of the ways in which anxiety to make out a case against the Pullman theory has obscured the statement of the Pullman facts. Farther on, the Report says that the Company collected its rents, not by deducting the amount from the wages paid, which is forbidden by law in Illinois, but by making payment in two checks, one being to the amount of rent due, and the other for the balance. These checks pass through the local bank, which is also the rent-collector, and the tenant is credited with a payment on his rent, and the balance over is given him in cash. All this, it must be acknowledged, sounds harsh, unfeeling, and characteristic of "the air of business strictly maintained there," and it is with some surprise that we find, in an insignificant paragraph on page 33, that "At the time of the strike about "\$70.000 of unpaid repts had accomplete." "\$70,000 of unpaid rents had accumulated. It is fair to say "that this accumulation of unpaid rent was due to leniency on "the part of the Company toward those who could not pay the "rent and support their families. Neither have any actual "evictions taken place. The Company has held these matters "in abeyance pending wage reductions and strike difficulties." Thus, this soulless corporation, while "strictly maintaining" the "air of business" which so displeases the Commission, had already given for it can prove to so led the arrows. had already given, for it can never hope to collect the arrears of rent, seventy thousand dollars to its poorer and more burdened men at the time of the strike, and, notwithstanding the provocation of what it considered an unjustifiable revolt of its men at the instigation of designing outsiders, had not, at the date of the Report, turned anybody out of its houses, rent or no rent. While, as we have repeatedly said, we disapprove of the principle of industrial paternalism of the Pullman sort, believing that it is, in the long run, better for men to be turned into the street as soon as their rent falls into arrears, we cannot see what reason the employés of the Pullman Company have to complain of what we do not hesitate to call the noble forbearance and generosity of the Company under very trying circumstances. It is a pleasure to discover from the Report that the employés, in a great degree, responded to the good intentions of the Company. As soon as the strike was declared, three hundred of the striking men volunteered to guard the Company's property, and did guard it, so faithfully that no violence or destruction took place there, and it was not until nearly two months later, when riots were raging all around, that a military force was called in as a precaution, to strengthen the volunteer defence. "Such dignified, manly and conservative conduct, in the midst of excitement and threatened starvation is," as the Commissioners truly say, "worthy of the highest type of American citizenship"; and we are quite sure that the experiences of the strike have left in the minds of the managers of the Pullman Company, as well as of their men, nearly all of whom, we believe, are again at work in the shops, a mutual regard which it will take years to obscure.

TTTORNEY-GENERAL OLNEY, who was last summer 1 the object of unmeasured abuse from labor agitators and Socialist newspapers, because of the wise and timely precautions which he advised at the time of the Debs-Sovereign railway strike, has proved himself a true friend of labor by interfering in behalf of the employes of the Reading Railroad, as wisely and effectively as he did last year in behalf of the innocent people whose lives and property were endangered by the Debs antics. It seems that the policy of the Reading Railroad has always been to discourage unionism among its men, and, a few weeks ago, eleven men who had joined the Brotherhood of Railroad Trainmen were called before the Superintendent, and notified that they would be discharged unless they abandoned their membership in the Brotherhood. The officers of the Brotherhood remonstrated, and the receiver of the railroad, who is also President of the Company, replied, saying that it was the fixed policy of the Company not to allow its employés to connect themselves with organizations which might make claims upon them incompatible with their duties to their employers, and he did not intend to depart from it.

S the receiver is an officer of the United States Court, Mr. Olney, as Attorney-General, was not only entitled, but probably felt himself bound, to make some statement of the view which the law department of the Administration

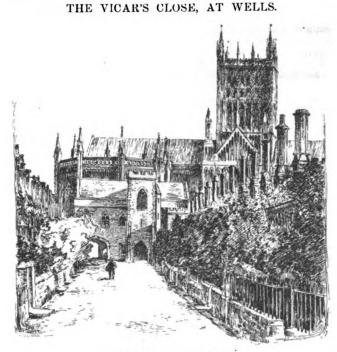
would take of this question, particularly as the controversy has taken the form of a suit before the Circuit Court; and he has written a letter to Judge Dallas, the presiding justice of the Court, pointing out that, as the railroad has been taken out of the hands of the Company, and is operated by the receiver, as servant of the Court, the past policy of the Company is a matter of no particular consequence, the relations between the road and its men being a matter for the Court to settle according to its own judgment, without regard to precedents set by a corporation which has no longer any control over the road or its employes. Taking this view, he thinks that, on general principles, to deny to railroad employés the right, which is enjoyed by other citizens, of belonging to such associations as they like, so long as their object is not wrong, will make them feel themselves unjustly treated, and tend to increase, rather than diminish, disaffection and discontent. Examining the constitution of the Brotherhood, he finds that it contemplates nothing illegal, while most of its objects are commendable; and the denial of the right to join it is based on no legal objection. As to the main questions involved, - whether it is undesirable for the employes of a railroad in the hands of a Court to belong to an organization of this sort, Mr. Olney says decidedly that it seems to him advantageous for all parties to have the men organized under a rational and conservative plan. To say nothing of the insurance against accident and misfortune, which is one of the chief objects of such associations, and is particularly necessary in so hazardous an employment, he thinks that such organization among the men tends to promote mutual respect between employers and employed, and to lead to concessions, and amicable adjustment of differences, and he reminds Judge Dallas that, in the present case, the Court is not only the standing arbitrator between its receiver and the men whom he employs, but has the power to enforce its decisions; and expresses his belief that, by recognizing, under such favorable auspices, the principle of hearing and arbitrating disputes between employers and employed, it will conciliate the latter, by showing them that there is not one law for one class of citizens, and another for another class, and will "preserve for the law, and the judiciary by which it is administered, that general respect and confidence which have always been a marked characteristic of our institutions."

E are always glad to welcome the Annual Report of the Chief of the Forestry Division of the Department of Agriculture. Professor Fernow is so earnest, and so thoroughly master of his subject, that his essays on it would always be interesting; but he possesses, in addition, an effective manner of presenting his conclusions which adds greatly to the value of his writings. In the present instance, our attention is at once attracted by a map, which shows in a most graphic manner the distribution of the small remaining area of forest land in the United States; and we believe that few people will look at this map without being startled into the idea that it is high time to look out for the preservation of such forests as are left to us, and to provide for planting new ones. This map shows us, for example, that in three States only -Maine, New Hampshire and Arkansas — does the forest area amount to more than sixty per cent of the whole territory; that a person travelling directly westward, from the end of Cape Cod to the Pacific Ocean, would not traverse a single State possessing more than thirty per cent of forest land; that a man might travel from the frontier of British America to the boundary of Mexico through States none of them possessing ten per cent of wooded area; and that, west of Minnesota and Iowa, there is a tract nearly as large as Europe, exclusive of Russia, which is destitute of any forests of commercial value. If this area were desert, there would be some excuse for its timberless condition, but it includes Kansas, Oklahoma, Nebraska and the two Dakotas, which have been, and are still, the richest wheat-raising parts of the continent. part of this rich ground to the raising of trees would be of incalculable value to the rest, through the more equable and moist climate which the forest would bring, and there seems to be absolutely no reason, except the expense, why this should not be done. Few persons realize that only eighteen per cent of the surface of the United States is improved, eighty two per cent being still wild land; and even the Atlantic Coast country, which has been settled for nearly three hundred years, and is often supposed to be "over-populated," and "exhausted," still has sixty-five per cent of unim-proved land. A good deal of this is wooded, but the forests on

it have been so plundered, burnt over and ruined that it will be generations before valuable forests of marketable timber can take the place of the wretched "scrub" which now covers it.

'N view of the rapid disappearance of the valuable timber of I the United States, the next question is, how to replace it. In the Eastern States, as Professor Fernow tells us, public opinion is slowly awaking to the importance of the subject, and some movement in regard to it has been made, either by the State authorities, or by private Forestry Associations, in Maine, New Hampshire, New York, New Jersey, Pennsylva-nia and Wisconsin. Farther West, progress in the matter has been backward, rather than forward. California has, for political reasons, as we are told, abolished its Forestry Commission, after eight years of valuable service; and Colorado has virtually done the same, by refusing any appropriation to pay the salary of its Forest Commissioner, and the expenses of his work. This interesting piece of administrative economy deserves to be noted in connection with what the German forestry statistics show of the value of land on which timber can be intelligently grown. Since the inauguration in Germany of the principle, first introduced by Frederick the Great, of submitting the State forests to rational regulation, the Prussian Government has had frequent occasion to buy new land, over which to extend its woodland property. As a rule, the land purchased has been waste territory, either entirely devastated, or spoiled by denudation on the American plan; yet, so valuable is land considered in Germany on which a crop of timber can, with care, be raised eighty or a hundred years hence, that after deducting the value of what standing wood there may be on it, which is always reckoned separately, the land alone brings, in lots of ten thousand to fifty thousand acres, from twenty to eighty dollars an acre. It is hardly necessary to say that such prices as these would make the mouths of owners of wild lands in Colorado, or New Hampshire, or Massachusetts, or Connecticut, or Pennsylvania, water. In Massachusetts, for example, thousands upon thousands of acres of ground, which once produced the finest whitepine timber in the world, and are still covered luxuriantly with second-growth pine, mingled with oak, are said to be valued by the assessors at five cents an acre, and could be bought for not very much more than that; yet clear white-pine timber, such as was cut from those lands a hundred years ago, sells now in Boston for sixty dollars a thousand feet, or at the rate of about one hundred dollars for the product of a single tree of the old-fashioned sort. In Germany, where the white pine was introduced from the United States eighty or ninety years ago, the plantations are said to yield annually fifty thousand feet of timber per acre. This would be worth in Boston, if of as good quality as formerly, at least two thousand dollars a year, tolerably good interest on an investment of five cents. But this is not all. The City of Frankfort has a forest of American white pine of seven acres. It does not allow any cutting of the timber, but rents the privilege of collecting seed from the trees. For the last eighteen years, this privilege has been sold, at an average rent of one hundred and fifteen dollars a year. It is well known that pine trees do not seed every year, and three out of the eighteen seasons have been barren, but, as compensation for this, the seed-privilege in one year was sold for five hundred dollars, much of the seed being exported to the United States.

PUBLIC hearing was held in New York the other day, on the subject of fires in tenement-houses, which was quite remarkable for the number of distinguished citizens present. Mayor-elect Strong, Mr. Richard Watson Gilder, Dr. Cyrus Edson, Mr. W. Bayard Cutting, President Bayles of the Health Department, Mr. Brentano, Fire-Commissioner Robbins, Chief-Engineer Bonner, Mr. F. C. Moore, of the Continental Insurance Company, and many others, assembled to learn what could best be done to keep people from being burned to death in tenement-houses. Mr. Brentano, who has kept a record of the loss of life from fires, said that, within the last ten years, two hundred and seventy-six persons had died in this way, of whom two hundred and fifty-six had been killed in tenement-house fires; and Chief Bonner made the startling declaration that in eleven months, from July 31, 1893, to June 30, 1894, there were 2,415 fires in tenement-houses in New York, of which seventy-six were maliciously set, while forty-one more were supposed to be incendiary.



Looking down the Close, Wells.

TURN to the left out of the market-place of the old town of Wells, and a few yards beyond the "Mitre" and the "Swan" in Sadler Street, bring one before an old gate-tower, which looks grimly down upon the narrow street. Under its blackened archway, known as the "Dean's Eye," goes the road into the Cathedral Close, and one sees across the level green the great front of the Cathedral Church of St. Andrew. In tier upon tier above the doors stand sculptured princes and prelates in their canopied niches, deep shadows behind them: square towers flank the front, their lack deep shadows behind them; square towers flank the front, their lacy parapets and tapering crocketed pinnacles cut against the sky. The cathedral is seen almost in elevation, a suggestion only of the north side being visible. Under a row of noble trees, just by, are benches where one falls into the way of resting a while to study the picture, when going to and from the town.

Joining the cathedral front on the right, a stretch of ancient wall at the back of the cloisters, almost unbroken except for an odd small window or two close under the eaves, is a good foil to the elaborate ornament of the front, the whole effect of which is, after

all, not restful.

Leftward, a charmingly broken line of walls and roofs frames in the picture; nearest are the battlements and graceful corner turrets the picture; nearest are the battlements and graceful corner turrets of the Deanery, to which a high battlemented wall, crowned with fine masses of ivy, joins the gate-lodge. This has a handsome oriel hanging above the great pointed gateway. Beyond is another stretch of high stone wall reaching to the Archdeanery buildings. Across the back of the picture swings the "Chain-Gate" gallery, leading from the Close Hall to the north transept, and over this hardly more than the parapet of the Chapter house can be seen.

This one point of view gives us a rarely complete and beautiful ensemble of mediæval church buildings. Good judges maintain that a more perfect impression of the best Gothic art is not to be had in all England.

all England.

What the critics have further said as to the great west front being a mere screen and in no way an honest expression of the Cathedral's plan, becomes apparent as one follows along the north side towards the Chain Gate, for the western towers are seen to project much beyond the walls, so exaggerating the apparent width of the church, and there is no suggestion of the real roof-lines in the square treat-

and there is no suggestion of the real root-lines in the square treatment of the upper part of the front.

In contrast with this, the simple dignity of outline, breadth of wall mass, and reserve of ornament in the north porch are peculiarly pleasing. It is Early English at its very best. The same feeling is recognized in the transepts.

recognized in the transepts.

In the Chain Gate, on the other hand one has the matured excellence of the Perpendicular, as yet giving no sign of the decadence of taste which followed all too soon. In this beautiful gallery we see the skilled hand of de Beckyngton, at its best.

Pupil and friend of William of Wykeham, Thomas de Beckyngton had learned the arts of architecture under that great master, of whose college at Oxford he was also a Fellow. During his incumbency of the bishopric of Bath and Wells, 1443 to 1465, he added several beautiful monuments to the cathedral establishment. The Chain Gate is the most notable of his works. The Palace Gate bears his arms carved upon the great boss which ties the ribs of the vaulted roof over the archway. He also built the gate-tower called the "Dean's Eye," giving into the green from Sadler Street, and the "Bishop's Eye," a narrow passage out of the northeast corner of the market-place into the Cathedral Close. The best of his many benefactions to the town was the beautiful old fountain, which

formerly stood in the market-place, now long since gone to ruin and removed, but fortunately still known through an old print, of which one may find copies in the book-shops. He made a conduit to run from the great Spring of St. Andrew's Well in the palace grounds, and gave to his loyal townsmen the priceless boon of a good water-

supply.

There is a curious old deed extant, in which the good Bishop confirms to the Master, Brethren and Burgesses of the City of Wells this right forever, on the sole condition that they yearly repair to his tomb in the Cathedral, there to pray for his soul and the souls of nis tomb in the Cathedral, there to pray for his soil and the soils of the faithful departed, further granting to the suppliants an indulgence of forty days for so doing. The crystal water still sparkles from a later font in the heart of the ancient town, but I fear the prayers for the generous donor have been long since forgotten. De Beckyngton designed as well as carried out the construction of all

his architectural work.

I have sketched his rebus, the "beck in tun," from a panel above the Bishop's Eye, and one finds his arms over the Chain Gate, and carven here and there upon soffit, or chimney, or belfry. Wherever his sign manual appears, are found the most charming bits of design carried out in immortal stone.

He united great statesmanship to his artistic skill and churchman's power, presenting a combination of several orders of genius to which the times and his high career gave opportunity for a development quite remarkable to us specializing moderns.

ment quite remarkable to us specializing moderns.

The Chain-Gate gallery was obviously intended to connect more intimately the Close buildings with the Cathedral and the Chapterhouse, but the mere gain of a covered passageway, even in the rude winters of the Mendip country, would scarcely warrant so costly a structure, and so daring an encroachment upon the architectural unities of the Cathedral. Behind its apparent purpose was hid the love of mystery and the jealous exclusiveness of the mediæval priest. Safe from prying eyes the Prebendaries and Chantry priests passed by the long corridor above the roadway to chapter and to mass. A tall flattened arch swings over the drive. The footways on either side are carried through smaller vaulted openings, looking into the side are carried through smaller vaulted openings, looking into the middle passage, about elbow height, through pretty arcades.

Over the central arch is a handsome triple group consisting of a

canopied niche of rich detail, to hold statue, between two transom windows, the three members under a single arch and label. The several bays of the second story curtains similar groups of openings. The bays are defined by slender pilaster-like members running up to the parapet. The latter is panelled. There is also an interesting panel treatment of the lower story of the bay cut by the roadway arches. Above are the usual pinnacles and crocketed finials. These were fallen into a dangerous state of ruin in Pugin's time, but have since been thoroughly restored. The moulded and carved work is in freestone, and the arrises of the stones are rounded off, and in places nearly the whole form of the members lost, by the actions of time and weather.

and weather.

To the left, just through the Chain Gate, a gloomy arch opens into the Vicar's Close. From under its dark shadow, one looks in upon a peaceful scene; a quadrangle closed-in by low, stone houses, and filled with flowers and sunshine, blessed silence and the loveliness of age. The Close is almost a rectangle, 436 feet long, but tapering from a width of 65 feet, by the gate-house, to 56 feet at the chapel, which stands across the north end. Down the sides are forty-two little stone houses, each having a tall, graceful cut-stone chimney rising above the front wall, and each having before it a pretty little garden, walled-in from the gravelled roadway which fills the middle space. the middle space.

the middle space.

During a sunny month of September which I passed there, it was very beautiful and picturesque. Glorious masses of Virginia-creeper were reddening against the walls amid rich, dark surfaces of ivy. The ancient walls are covered here and there with brilliant patches

The ancient walls are covered here and there with brilliant patches of lichens in yellow and gray-green.

In the narrow, tracery-headed windows swing diamond-paned leaded casements. Several of the old gate-porches remain. The wall is ramped up to them on both sides. They are built of cut stonework. The heavy wooden door hangs in a pointed arch chamfered on the edge of the opening. In each spandrel is a carved rose. The top swells out into a pretty cornice with crenellated upper member. The vines clamber up over the old gates and hang down tendrils across them. down tendrils across them.

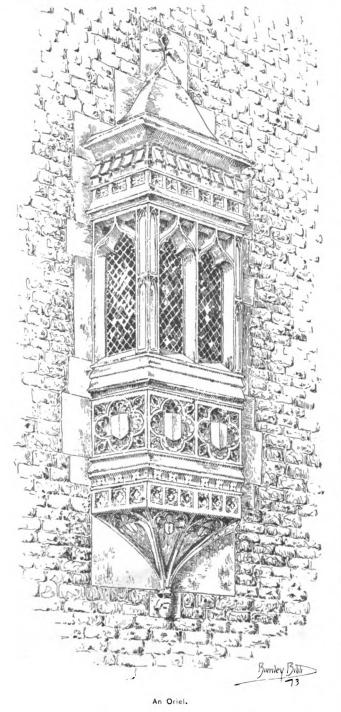
down tendrils across them.

There were originally thirteen of the vicar's chorals; they were increased to the present number of houses in Beckyngton's time, but again reduced to twenty by Elizabeth. The present houses belong partly to these gentlemen, who are now merely lay-singers appointed to the office, and partly to other members of the Cathedral establishment. Several of the little dwellings have been carefully restored to their original appearance. Many, unfortunately, have lost their old forms under Georgian bay-windows and doorhoods and even stucce has descerated the anxient stones. hoods, and even stucco has desecrated the ancient stones.

In the olden time, the vicar's chorals were in holy orders. Joceline ordained the first of them in the year 1237. Their duty was to relieve the canons in chanting the musical portions of the mass, and as their number increased, they received lands and houses from Bishop de Hulle.

Ralph of Shrewsbury erected for them a new college, and the hall—under whose arched gateway we now enter the Close—contains a library, a "kitching" and a common room. There are some fine old black-oak napkin panels to be seen in the hall, and on

a shield of stone in the wall are cut the arms of the See of Wells and the name "Ricus Pomeroy." The two oriels were probably added in the same period, but the two-light lancet mullion and transom window is part of Ralph of Shrewsbury's original design. The oriel on the street-wall of the house east of the gate is richer than these, and I found it very graceful in shape and ornament. I give a drawing of it here as a fair example of the cut stonework of the time. A fellow to it hangs on the west gable of the house next the Archdeaconry. A long flight of well-worn stone steps leading to the hall above and to the Chain-Gate gallery starts under the high pointed arch in the gate-house tower. Over this is a small muniment-room, eight feet square, fitted with oaken presses for the keeping of documents. A circular stair from the hall gives the keeping of documents. A circular stair from the hall gives



access to a room over the muniment-room, which is reached from this apartment down another small, winding stair in the turret on the side of the square tower.

bide of the square tower.

De Beckyngton's will, after providing for a number of bequests, left a balance to be expended by his executors "in pios usos." The executors were Richard Swan, Precentor of Wells and Rector of Yelverton, Hugh Sugar, I.L. D., also known as Norris, the Treasurer of Wells, and John Pope, or Talbot, D. D., Prebendary of St. Decuman's and Rector of Shyre. They, each, received a sum of twenty pounds for their services. They expended the bulk of the good bishop's money in repairs and additions to the Vicar's Close. Their arms are emblazoned upon the chimney panels, Swan's being, in heraldic phraseology, "a fesse between three swans"; Sugar's, "a large old-style "H' and three loaves of sugar," Norris's, "a chevron

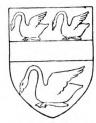
between two roses, in chief, and a talbot in base." The panels over these bear the arms of Bath and Wells. These chimneys are all that remain of the original structure of many of the houses, which have been extensively modernized. One or two have been restored properly, but it is a pity that the ordinance which empowers the

John Pope or Talbot.

Richard Swan.

Hugh Sugar.







The Arms of the de Beckyngton Executors.

bishop and principals to require a uniform retention of the old design should not be enforced.

The doors opened into a room of thirteen by twenty reet, tow-studded and paved with flags. The ceiling showed two large cross-beams. There was a great fireplace by the door, a two-light mullioned window in the front wall beside it, a similar opening in the rear wall, and a small loophole, for observation, by the door. an offset at the back, a square staircase led to the upper story. This was in one room with an open roof. The rafters and tie-beams were simply chamfered. A small wood cornice, in miniature battlements, was carried round at the spring of the rafters, about eight feet from the floor. There were four mullioned two-light windows. The room was lofty and pleasing. It was the sleeping-room of the vicar in occupancy.

Modern ideas have made these dormitories low and stuffy by add-

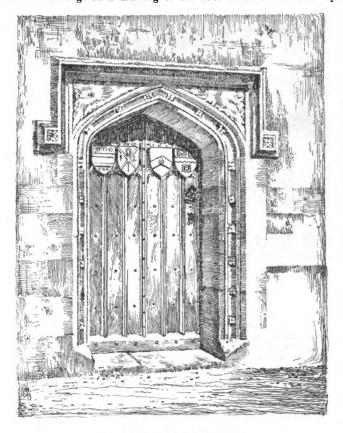
ing a plaster ceiling.

In one of the restored houses I found a most charming mediæval the restored notes I tould a most charming mediaval interior. The plan is kept as described above, except that two of the little houses have been joined by a door in the party-wall. It is an artist's home. Going in under the old gate-porch, one passes through a small garden full of roses. Cast about here and there in the grass are some bits of carved Gothic stonework picked up at odd times from Somerset ruins. The massive door opens into a paved hall with walls of bare stone and heavy-beamed ceiling of blacknan with wans of bare stone and heavy-beamed centing of black-ened oak boards. In the broad fireplace one might pile great logs. The room is furnished with some oaken benches and chests, and tables and heavy chairs of Gothic style, a quaint lectern and a bit of old tapestry. The light is dim, and brown shadows lurk mysteri-ous in the corners. The slight variations in color, and the irregular network of the jointings of the stones in the wall have a good effect. In the studio above, one finds the open wood roof very interesting. There is a wide three-light window with a broad ledge for books, paint-boxes and brushes. Portfolios stand along the floor against the wall, and there are stacks of water-color drawings and old prints about on the chairs and tables. There are examples from earlier schools of English aquarellists and rare architectural books. The host is himself an accomplished mediævalist, and his own pen and pencil drawings from the beautiful Gothic halls and churches of Somersetshire are not the least of his treasures. He knows Exmoor by heart, and from hours of patient study with pencil and brush has brought away the rugged outlines of lonely tors and the glories of the heather on a windy moor, with the cloud-rack wreathing across the misty skies.

There is a charming view from his study-window south, and down the Close, across the pretty gardens. The dark mass of the Cathedral shows above the roof and battlements of the gate-house, the delicate perforated parapet of the octagonal Chapter-house lifts its delicate perforated parapet of the octagonal Chapter-house lifts its eight crocketed pinnacles, a glimpse is had of the tracery of one of its glorious decorated windows, and above is the long straight back of the Cathedral roof; the ridge-line lacks that lacy airiness given by the intricate "faitage" of good French Gothic. Over all, the great central tower looks down into the quiet Close. One sees the splendid traceries of its tall perpendicular wirdows against the light. Slender, vertical members refine the bulk of its square mass. The flowering pinnacles and openwork parapet fret the sky-line. The rooks are always flying in and out up there, and their scolding comes harsh upon the silence. Sunshine is bathing in soft light comes harsh upon the silence. Sunshine is bathing in soft light the old walls which time has painted in grays and velvet blacks, brightened here and there by a wash of green, or a brilliant dash of red and yellow, where a field of lichen has spread upon the ancient

Nothing could be more deliciously, restfully satisfying in color, and when one has felt and loved the beautiful reserve and completeness when one has felt and loved the beautiful reserve and completeness of this, there is a certain unavoidable shock in the sight of hard lines of black against white marble, bands of fleshy red checkerwork of multicolored stones, disks of green and lines of gold, and the splendor of mosaic glowing upon outer walls, as when one comes from England to look upon, say, the Florentine Duomo an Giotto's Campanile, under the staring blue of an Italian sky. With what a sense of relief the eye wanders to the exquisite little Bigallo, across the way, and rests upon its monotone of dingy gray. In the first newness of impression, one fails to grasp the exquisiteness of the Italian work. In time one may almost grow to think there is none beside it.

The very heart of our quiet little Close is in its Chapel. lower story of this charming little building is ascribed to Bishop Ralph of Shrewsbury, the windows of the Chapel being unmistakably of his time. Their traceries are very graceful. The door is set in under a window-head. The whole stone casing of the door was removed from its former place in the middle of the west end, according to Pugin, who claims to have found its old place in the west wall. I have given a drawing of the door which is worth study.



Door of Chapel, Vicar's Close, Wells.

The little shields at the heads of its panels bear various heraldic devices. The third from the left has the arms of Bishop Nicholas Bubwith, 1407 A. D., the same we find on his chantry in the nave of the Cathedral, and in one of the painted quarrels of the Chapel windows. The upper part, where the windows are all square-headed, and the parapet above them showing three richly-treated canopied niches, correspond to the style of work in de Beckyngton's palace gate. The niches are elaborately designed and have small buttresses, pinnacles, and crockets in a style of Gothic which Mr. Ruskin has condemned meet severely. Ruskin has condemned most severely.

De Beckyngton's arms are carved upon the shield on the side of the pretty little bell-turret; "argent on a fesse azure, between, in chief, three stags' heads caboshed, gules, attired, or; and in base three pheons, two and one, sable; a mitre labelled of the fourth."

Architects, at least, must be sorry that heraldry has quite fallen into disuse, or never had a being in our own country. We have not quite given up the forms which were devised in the old work to carry armorial emblazonments. They are too important a feature of decorative architecture to be dispensed with. But they are becoming meaningless. The personality, the bit of human history they wrote upon the walls of the old houses, when they bore upon their faces the quarterings of the master, are lost to our modern buildings. buildings.

What a pleasure one takes in Swan's stately birds, and in Pope's little talbot upon the chimney panels of the vicar's dwellings. The little dog is sculptured in a realistic way, with one forefoot lifted, the long flapping ears pointed forward, and the taper tail almost wagging. He is almost a peer, as an architectural dog, of that famous small animal who sits by the tent-flap of the shepherd in one of Giotto's reliefs on the base of his glorious tower. Mr. Ruskin put him on the screen once for the boys in one of his lectures, and the intent ears and curling tail of the puppy drew a hearty and irrepressible cheer.

The interior of the Chapel is very interesting. The tall wood screen, just inside the door, is very richly carved in an openwork member along the top. The handsome three-light, east window, which was blocked up in Pugin's time, is restored and has some beautiful glass. Under it is a small stone altar with a canopied niche on either side, now empty. The front of the altar has tall, narrow

panels with tracery heads. Two similar stone tables in either corner

panels with tracery heads. Two similar stone tables in either corner of the chancel were formerly used for the sacred vessels of the mass. The mural decorations are incised in the plaster from designs by Mr. Henry Sumner, the nephew of the Rev. Mr. Gibson, the present Principal of Wells Theological College. The figures painted in metallic lustres above the dado by the screen are also his work. The Chapel has a splendid wood ceiling in four large panels, subdivided into four smaller compartments, which are again made up of four smaller ones. The heaves are very righly moulded, and at their four smaller ones. The beams are very richly moulded, and at their intersections are wooden bosses boldly carved in strong relief. The beams are held on moulded brackets, and there are carven ornaments

of elaborate leafage in the angles of the timbers.

The room above the chapel, a small library, has also a fine wood roof. This room is reached by a winding stair from the Chapel. The Chapel is now used entirely by the Theological College.

West of the Chapel is a very interesting house, with its gable to the Close. The great, two-storied, four-light window has been well restored. The abidde in the group repolling hear the cause of

the Close. The great, two-storied, four-light window has been well restored. The shields in the stone panelling bear the arms of Bishop de Beckyngton, the See of Wells, and of Bath and Wells conjointly; the last quarterings are the arms of Bishop Stillington, who succeeded de Beckyngton in 1466.

The Close suffered very little from the spoilers and iconoclasts of

The Close suffered very little from the spoilers and iconoclasts of the Reformation. Elizabeth granted a charter of incorporation to the "Principals, Seniors and Vicar's Choral of the choir in the Cathedral Church of St. Andrew at Wells," with a seal. Their number was fixed at not less than fourteen, nor over twenty.

In later years, and especially in the early part of our own century, the buildings have suffered much from abuse and dilapidation.

Chapel was in disuse and full of rubbish in the year 1840.

There was a "malting-house" in the gate-house, a shop-front under the beautiful oriel of our drawing. "Many of the houses were modernized with common sash windows, bastard Italian doors, and plain parapets." Some of them have come back to their first beauty. Let us hope that good taste and intelligence will gradually bring healt Clear the global state and intelligence will gradually bring back to the old Close the glory of its Gothic birth.

The life of the Close is not out of keeping with its antiquity of aspect. Its inhabitants are, for the most part, clerical. The College masters, one or two prebendaries and the vicar's choral reside here, and all the Theological College men must have chambers within the gates. A crowd of young men in Oxford and Cambridge gowns fill the court of a morning, rushing off to prayers in the within the gates. A crowd of young men in Oxford and Cambridge gowns fill the court of a morning, rushing off to prayers in the Palace Chapel, streaming back to breakfast, and afterward to their lectures in the Archdeaconry. Here the College has splendid quarters in a new and very beautiful building, which, I believe, is the work of Mr. Freeman. They come quietly through the Close again, at noon, to prayers in their little chapel before dinner, after which there is great bustle of gatting away to the cricket field in again, at noon, to prayers in their little chapel before dinner, after which there is great bustle of getting away to the cricket-field in white flannels, or off in knickerbockers and with golfing bags to the links on the top of the Milton Hill. Silence reigns throughout the Close in the evening, and one sees in every house the reading-lamps alight and a student bending over his books. At ten, they quietly assemble in the Chapel for night prayers. The old painted windows gleam like jewels. Through an open casement come the voices of the young hierophants singing their evening hymn, and one may see them standing with earnest faces turned towards the chancel. may see them standing with earnest faces turned towards the chancel. There are about thirty-five. Quarters are assigned them in the Close, where they have limited messes, but each must have his own sitting-room for study. Many live comfortably enough, and are pretty well cared for by the landladies who lease the little houses from the vicars. I was courteously bidden to a midday dinner with the Senior Mess, and enjoyed the meal in excellent company, later going over the links with a "foursome" and seeing my first golf. The view of Wells from Milton Hill is very fine. The great gray mass of the Cathedral rises from the meadows like a great weather-beaten crag, with the Close, the Deanery, the Cloisters and the other church houses clustering under the shadow of its walls, and beyond, the gardens and towers of the Bishop's Palace within the moat, and a long line of red-roofed houses of the town straggling away westward to where St. Cuthbert's Minster lifts its noble

The landscape is very lovely. The meadows, stretching away green and fresh to the hills, are dotted with trees and groups of farm buildings. Beyond, Dulcot and Dynder lift a bald and ridge. Away over the green plain, the old tower-crowned Tor of Glastonbury stands against the sky, reminding one of Avalon and the Arthurian legends.

In the near foreground the fields slope down from the hill, and there are groups of noble oaks and elms in those full bosky masses and graceful spread of branches which are peculiarly characteristic of the English trees. Westward, the eye may follow the swelling backs of the Mendips away toward the glowing evening sky, across the silver gleam of Bristol Channel, into the purple distance where lies Wales. А. В. Вівв.

THE FRESCOES IN THE HOUSES OF PARLIAMENT, LONDON. - Mr. Herbert Gladstone has been taking advice concerning the deterioration of the frescoes in the British Houses of Parliament, the efflorescence upon those painted by the water-glass process having almost entirely obscured them. It is proposed to obtain a report from some expert, such as Professor Church of the Royal Academy, as to whether or no the decay can be arrested. - N. Y. Evening Post.

tecture was

given in the fall term of

1872, and con-

sisted mainly

of artistic picture - mak-ing, and not much of that. The first real

instruction in

archite tiral subjects be-gan in the fall

of 1873, when the present incumbent of

the chair of architecture, Professor N.

Clifford Ricker, was placed in charge of the depart-

ment. He immediately ar-ranged a four

years' course

Professor

ARCHITECTURE AT THE UNIVERSITY OF ILLINOIS.

N November 15, the University of Illinois installed Dr. A. S. Draper, late Superintendent of Public Instruction of New York State, as President, and also dedicated a new building to the uses of the College of Engineering, which includes the departments of mechanical, civil, electrical and municipal engineering, and architecture. At the dedicatory exercises, the address in behalf of the educational interests was delivered by President Adams, of the University of Wisconsin; that in behalf of the architectural interests by Mr. D. H. Burnham, Chicago, President of the American Institute

of Architects; while the wellknown civil engineer, Gen. William Sooy Smith, of Chicago, spoke for the engi-

neers.
The University of Illinois is one of the rapidly growing edu-cational institutions of the Central States. was founded in 1868 upon the proceeds of the United States land grant, and now has an instructi o n a l force of sev enty, and eight hundred

The Institution is divided into four colleges: Agriculture, students. Engineering, Literature, Science. Only three institutions in the United States have more students in engineering. The School of

United States have more students in engineering. The School of Architecture is the largest in the country.

The new Engineering Hall is the handsomest of the group of six principal University buildings. The building has a front of two hundred feet, with wings at either end seventy-six feet deep, while the central portion extends back one hundred and forty feet. It is four stories in height. The first story is of Cleveland sandstone, and the remainder is of buff pressed brick, with terra-cotta trimmings. The roof is of slate with large skylights. The mill system of construction is employed throughout. Plate-glass windows and Washington fir and polished oak, with other finishings in keeping. Washington fir and polished oak, with other finishings in keeping,

make the interior very attractive. Steam heat, attractive. mechanical ventilation, gas and electric lights will be The building cost used. \$160,000.

The architect of the building was Mr. G. W. Bullard, of Tacoma, Wash., a graduate of the School of Architecture of the University of Illinois. A principal prize of \$1,000 was offered for the best design, and a second thousand dollars was divided between the second, third and fourth best designs. The award was made by a committee of the Board of Trustees, consisting of an architect, a civil engineer, and a business man, with N. Clifford Ricker, Profes-sor of Architecture, as con-

sor of Architecture, as consulting architect.

In the planning of the building, the greatest thought and care have

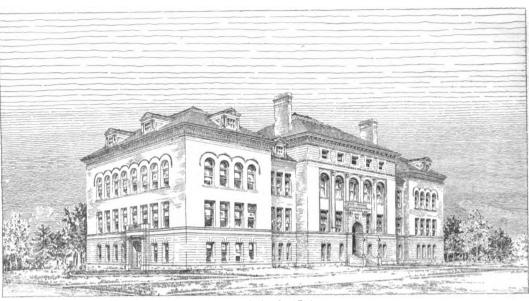
been given to the arrangement of the rooms for the purposes of instruction. Lecture-rooms, draughting-rooms, seminary-rooms, or instruction. Lecture rooms, urangining rooms, seminary rooms, studies, offices, cabinet and filing rooms, and library have been planned for their especial purposes. The furniture also has been designed to meet the requirements of modern engineering instruction. Large space has been given to cabinet and wall cases, and ample provision has been made for filing pamphlets, drawings, photographs, models, specimens, etc. The masonry laboratory of the Department of Civil Engineering has two large rooms in this building. The

laboratories of Mechanical Engineering, Electrical Engineering and Applied Mechanics are in other buildings.

Adjoining is presented a perspective of the building, and also a floor-plan of the fourth floor, which is devoted exclusively to the department of Architecture.

At the exercises connected with the laying of the corner-stone, Ira O. Baker, Professor of Civil Engineering, read an historical sketch of the College of Engineering. The paper has not been published, but we are permitted to make the following extract. After tracing the growth of the Mechanical Department, the Professor said:

"The first instruction that had any direct relationship to architecture and the statement of the mechanical content of the statement of



ENGINEERING HALL

of instruction designed to prepare students for the profession of architecture. At that time there were but two colleges giving instruction in architecture, and at present there are only eight, but the University of Illinois has more architectural students than any two of them.

"Time does not permit an adequate account of the self-sacrificing and earnest efforts of Professor Ricker in building up this department, but there is one fact which the occasion demands should be ment, but there is one fact which the occasion demands should be made public, that a modest man may have the honor justly due him. I have already said that Professor S. W. Robinson and the mechanical department deserve credit for the establishment of the first distinctly educational shop in the United States. To Professor Ricker may be given the honor of introducing into this country the

so-called Russian system of shop-practice. "Professor Robinson's system consisted in setting a student to make some part or the whole of a machine. The system which Professor Ricker introduced consisted of a graded series of exercises, in which the student learns the uses of different tools in succession. In the first system, part of the attention is directed to the training of the student, and part to the making of a machine; in the second, the whole attention is given to training the student. The latter system is now em-ployed in all school-shops in America, except one. Dr. Runkle, of the Massa-chusetts Institute of Technology, Boston, is credited with having introduced the Russian system of shoppractice in America, a dis-

Engineering College University of Illinois Descripents of Architecture and of chilectural Engineering Plan of Fourth Floor es soale occupy entire floor

tinction he certainly never claimed for himself, and which unquestionably belongs to Professor Ricker, of the University of Illinois.

"The architectural department of this institution is preëminent in another important particular. The fundamental idea of the course is that the architect should be first, a safe and economical builder second a man of business gaugetty and third an artistic builder, second, a man of business capacity and, third, an artistic designer. Nearly all the architectural schools in the world consider artistic design of the first importance, and many of them entirely ignore matters of construction. Our course is planned to help a

young architect in the whole round of his duties, and is not confined to one of the subordinate branches of his future employment.

"A distinguished American architect, himself both an artist and a constructor, says that only one-twentieth of his time is devoted to a constructor, says that only one-twentieth of his time is devoted to artistic design, while nineteen twentieths are given to construction, business affairs, and office detail. The pronounced success of our architectural graduates proves that they have been well prepared for their chosen profession. I prophesy that when the evolution of the collegiate architectural course shall have been as fully worked out as is that of the civil and the mechanical engineering courses, it will be found that the University of Illippis has again been a pion will be found that the University of Illinois has again been a pioneer, and marked the pathway in which others follow."



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

THE DANIEL PEIRCE HOUSE, PORTSMOUTH, N. H.

[Gelatine Print issued with the International and Imperial Editions only.]

This house was built in 1799.

THE HOUSES [RESTORED] IN THE VICAR'S CLOSE, WELLS, ENG. SKETCHED BY MR. A. B. BIBB, ARCHITECT, WASHINGTON, D. C.

THE CHAPEL, OUTSIDE AND INSIDE, WELLS CATHEDRAL, WELLS, SKETCHED BY MR. A. B. BIBB, ARCHITECT, WASHING-TON, D. C.

SEE article elsewhere in this issue.

THE COLLEGE ARMS HOTEL, DE LAND, FLA. MR. G. T. PEAR-SON, ARCHITECT, PHILADELPHIA, PA.

[Additional Illustrations in the International Edition.]

CENTRAL ENTRANCE TO THE NEW UNION STATION, MESSRS. SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS, MASS. BOSTON, MASS. [Gelatine Print.]

THE ACADEMY OF DESIGN, NEW YORK, N. Y. MR. P. B. WIGHT, ARCHITECT, CHICAGO, ILL.

[Gelatine Print.]

BECAUSE the Metropolitan Life Insurance Company has recently acquired all of the square bounded by Madison Ave., 24th St., Fourth Ave. and 23d St., with the exception of a single lot, and proposes to at once enlarge its palatial building now at the corner of Madison Ave. and 22d St. and ultimated the corner of Madison Ave. Madison Ave. and 23d St., and ultimately to cover the whole block, it has seemed to us proper to make a record in our pages of this building, before it is too late. This record might have been made before, it is too late. since the building was a new one at the time this journal was founded, but it was no longer a novelty at the time when it became possible for us to use the gelatine printing process.

DESIGN FOR A VILLAGE CHURCH. MR. F. C. EDIS, ARCHITECT.

This plate is copied from The Builder.

THE RAILWAY-STATION, DUSSELDORF, GERMANY.

This plate is copied from Zeitschrift für Bauwesen.

PLAN OF THE SAME.

QUEEN'S HALL, LANGHAM PLACE, LONDON, ENG.: DOORWAY.
MR. T. E. KNIGHTLEY, ARCHITECT.

PRESBYTERIAN CHURCH OF ENGLAND, BROMLEY, KENT, ENG. MR. JOHN C. T. MURRAY, ARCHITECT.

THESE buildings, now in course of erection, on the east side of Freelands Road, near the junction of Upper Park Road, occupy a site 150 feet deep by 70 feet frontage, and when finished will form one of the most convenient and complete blocks of buildings recently erected for the Presbyterian Church of England. The buildings include a church, lecture-hall, vestry, class-rooms, etc., and have been admirably planned and arranged to meet the varied requirements of church work. The plan of the church is cruciform and consists of nave, aisles and transepts, with seating for over 700 worshippers— 547 in the area and 174 in the galleries, which are in the transepts

and at the west end of nave. The choir and organ are in the north transept gallery. Immediately in rear of the church is a lecture-hall, to hold about 240, and so arranged that it may easily be divided by folding partitions into separate class-rooms for Sunday-school purposes. There are also on the ground-floor a session-house, vestry and lavatories, and on the first floor a large class-room and a ladies' or "Dorcas" room with lavatory attached. In the basement are a kitchen and heating-chamber. The whole of the exterior walls and the interior of the church are faced with red brick with Doulting stone dressings. The roof has steel principals and purlins and is covered with green slates, and the woodwork of the interior is of pitch-pine. Solid wood-block flooring throughout the ground-floor for church, hall and passages. The spire measures 118 feet from ground to vane. and at the west end of nave. The choir and organ are in the north ground to vane.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

SAMPLES WANTED.

UNIVERSITY OF CALIFORNIA, BERKELEY, CAL.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, - I am anxious to have samples of various materials, patents, etc., used in architectural work, from different firms.

It seems to me that it will be an advertisement for business men, and students will become familiar with what is in the market.

Will you kindly tell me what to do? Yours respectfully,

B. R. MAYBECK.

[We are glad to assist our correspondent by making known his needs and desires. — Eds. American Architect.]

A QUESTION OF CHARGES.

NEW YORK, N. Y., November 9, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:-

Dear Sirs, — A asks B to make plans, specifications and details, without superintendence) for a house. Two houses are built at without superintendence) for a house. Two houses are built at the same time from the same design for \$8,500 each, B making a new set of floor-plans only, for the second house, this being necessitated by reversing the floor-plans, one house facing north and the other south. Besides the one set of details, B furnishes A with four sets for specification and seels of details, B furnishes A with four sets for specification and seels of details, B furnishes A with four sets for specification and scale drawings complete. The architect's fee has not been alluded to by either party. In your opinion, what is a fair charge for B's services? Respectfully yours, X. Y. Z.

a fair charge for B's services? Respectfully yours, X. Y. Z. [WE should think that \$500 would be a fair charge. The custom is to charge for drawings and specifications, without superintendence, three-and-one-half per cent on the cost, for buildings costing \$10.000 or more; and most architects charge as much for work on an \$8500 house as for one costing \$10,000. Although a Massachusetts Court has decided, in a case where ten or twelve similar buildings were erected from the same plans, that the architect was entitled to a fee of five per cent on the cost of the whole, the old New York architects, in such cases, where no supervision was required, used to make the regular charge on the cost of the first house, and one per cent on the cost of the duplicates. In the present case, the plans had to be re-drawn for the second house, so that something more than this would be fairly payable. — Eds. American Architect.]



Boston, Mass.—Exhibition of Millet's "Sower" and other Paintings loaned by Quincy A. Shaw, also, the Works of Adolf Menzel and Drawings by John Trumbull: at the Museum of Fine Arts.

Pastels by J. Appleton Brown: at Doll & Richards, 2 Park St., closes November 28.

Pictures by Joseph Lindon Smith: at the St. Pattels Co.

Pictures by Joseph Lindon Smith: at the St. Botolph Club, opens November 26.

November 26.

Water-colors by Sears Gallagher: at Foster Bros., 164 Boylston Street, closes December 1.

Exhibition of Pictures of New England Life by New England Painters: at Jordan, Marsh & Co.'s, opens November 27.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil paintings and Sculpture: at the Art Institute, October 29 to December 17. Water-color Exhibition: at F. Keppel & Co.'s, 1 Van Buren Street.

New York, N. Y. - Loan Exhibition of Portraits of Women: at the National Academy of Design, November 1 to 24.

Loan Exhibition: at the Metropolitan Museum of Art, New North

Wing opened November 5.

Ehrich Collection of Old Masters; also, Group Exhibition by American Painters—William M. Chase, J. Alden Weir, Childe Hassam and others: at the Galleries of the American Fine Arts Society, 215 West 57th Street.

Zschille Collection of Arms and Armor: at Tiffany & Co.'s, Union Square.

Exhibition of Early Printed Books from the Bruce Collection: at the Grolier Club, November 9 to 24.

Drawings by "Life" Artists: at "Life" Building, 19 West 31st Street, closes December 1.

Illustrations of Shakespeare, by Edwin A. Abbey: at F. Keppel & Co.'s, 20 East 16th Street, closes December 7.

Philadelphia, Pa. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 16.



Effect of Illuminants on the Atmosphere.—The following table shows the oxygen consumed, the carbonic acid produced, and the air vitiated by the combustion of certain bodies burnt, according to a circular issued by an American electric illumination company at Cleveland, so as to give the light of twelve standard sperm candles, each burning at the rate of one hundred twenty grains an hour:

urnt to give light of 12 caudles, equal to 120 grains an hour.	Cubic feet of oxygen consumed.	Cubic feet of air consumed.	Cubic feet of carbonic acid produced.	Cubic feet of air viti- ated.	Heat produced in one pound of water raised to 10° F.
Cannel gas	3.30	16.50	2.01		195.0
Common gas	5.45	17.25	3.21	217.50 348.25	278.6
Sperm oil	4.75	23.75	3.33	356.75	233.5
Kerosene	4.45	22.30	3 54	376 30	332.6
Paraffin	6.81	34.05	4.50	484.05	361.9
Camphene	6.65	33.25	4.77	510.25	325.1
Sperm candles	7.57	37.85	5.77	614.85	351.7
Wax	8 4	42.05	5.90	632.25	383.1
Stearic	8 82	44.10	6.25	669.10	374.7
Tallow	12.00	60.00	8 73	933.00	305.4
Incandescent electric-light					13.8

The advantages of the incandescent light as above stated are: - It has, practically, no affect on the temperature of a room; it is absolutely free from noxious qualities of gas or oil, which can only be prejudicial to health; it consumes no oxygen whatever. In fact, it combines the maximum of light with absolutely no impurities. — Invention.

Vitriuvius. — The history of Vitriuvius is known only by what he casually says of himself in his treatise. He is noticed only by two ancient writers — by Pliny, who enumerates him among the writers from whose works he compiled, and by Frontinus, in his treatise on aqueducts, "De Aqueductibus," who mentions him as the inventor of the Quinarian measure. Neither the time nor the place of his birth is known, but he is generally supposed to have been born at Formiae (Mola di Gaëta), in Campania, from several inscriptions relating to the Vitruvia family which have been found there. As he dedicated his work to the Emperor Augustus when he was already old, and as it was written before the theatres of Marcellus and Balbus were built, which was in the year 13 B. c. (for when Vitruvius wrote, the theatre of Pompey was the only stone theatre in Rome), it follows that he must have been born about 80 B. c., or a little earlier. From what he says in the prefaces to his third and sixth books, it would seem that he was not very successful in his profession; he executed only one public work that is mentioned, a basilica at Fanum. He was, however, at the time that he wrote one of the superintendents of the engines of war, the others being Marcus Aurelius, P. Numisius and Cn. Cornelius, a place which he had obtained through the recommendation of the emperor's sister, and it was on account of this appointment, as he himself says, that he dedicated his work to the emperor. He states that he had received a good education, and was fond of literary and philosophic subjects, that riches were no object with him, and that he was possessed of very little, but that he hoped to acquire a reputation with posterity for the treatise he was then writing. He mentions, in the preface to his seventh book, the architectural writers to whom he was chiefly indebted for information, namely, Agatharcus, Democritus and Anaxagoras, Silenus, Theodorus, Ctesiphon and Metagenes, Phileos, Ictinus and Carpion, Theodorus Phoceus, Philo, Hermogenes, Argelias and

The END of the Sciarra Case. — Don Masseo, Prince Sciarra, after defending for two years a suit of the Italian Government against him for an alleged violation of the law in the sale of his gallery of paintings, has been condemned, finally, to pay a fine of \$360. The case of the Government was based on an edict issued at the commencement of the century, and countersigned by Cardinal Pacca, which prohibited the sale of paintings and art-objects from galleries of great Roman families when the Pope's permission had not been obtained. The Government's contention was that the art treasures of great private galleries were, in reality, held by their owners as trustees; but the tribunal of Ancona, in condemning Prince Sciarra to a mere fine for contravention, upsets the Italian Government's theory, and, at the same time, pleases impoverished Italian noblemen and eager art-collectors. — N. Y. Times, November 6. THE END OF THE SCIARRA CASE. - Don Maffeo, Prince Sciarra, after November 6.

"Faked" Woods.—"Treated birch," says a Philadelphia builder, "becomes mahogany of rare beauty, and 'soaked' maple goes into all 'ebony' pianos now. So cleverly is the 'fake' wood 'weighted' that nothing short of borings will prove the deception. Maple mahogany is soaked through to a depth of four inches, and will polish even better than the genuine wood."—N. Y. Tribune.

THE COPPER WEEPING-WILLOW AT CHATSWORTH. - In the world-The Copper Weeping-Willow at Chatsworth.—In the world-famed gardens of Chatsworth, the most beautiful seat owned by the duke of Devonshire, is an artificial weeping-willow. It is made of copper, and so dexterously fashioned that at a distance it resembles a real tree. Visitors are generally attracted under its branches, when the guide steals off to a secret tap which, on being turned, causes a tiny spray of water to burst from every branch and twig of the tree. Another glory of Chatsworth gardens is the magnificent conservatory of iron and glass covering an acre of ground, which suggested the idea for the 1851 exhibition building of glass in Hyde Park.—Detroit Journal.

A BRIDGE 636 FEET HIGH.—The highest bridge of any kind in the world is the Loe River viaduct, on the Antofagasta Railway, in Bolivia, South America The place where this highest railway structure has been erected is over the Melo Rapids, in the Upper Andes, and is between the two sides of a cañon, which is situated 10,000 feet above the level of the Pacific. Counting from the surface of the stream to the level of the rails, this celebrated bridge is exactly 636½ feet in height. The length of the principal span is eighty feet, and the distance between abutments (total length of bridge) is 802 feet. The largest column is 314 feet 2 inches long, and the batter of the pier what is known to bridge-builders as "one in three." The gauge of the road is two feet six inches, and trains cross the bridge at a speed of thirty miles an hour. — Cincinnati Commercial-Gazette.

Laying A Gas-main by Aid of Locomotion. — Contractor Stanton, of Chicago, who has charge of the work of laying the International Gasmain across the Detroit River, intends to do it on a new and original plan, which, if successful, will save the expenditure of a large amount of money. At the foot of Orleans Street a ditch has been dug twenty feet deep, beginning at the water's edge and sloping back to the surface of Franklin Street. At the bottom of the ditch is a plank trough, and in it is 600 feet of the pipe. At the river end is a conical head, in which is a large iron ring. A cable will be attached to this and taken across the river, where it will be made fast to three Grand Trunk Railway locomotives, which will pull it across as fast as new lengths of pipe are attached on the American shore. The clamps on the joints will weigh about 1,000 pounds each, and are for the purpose of holding the pipe at the bottom of the river. — New York Times.

MILBANK PENITENTIARY. — Milbank Penitentiary was the first building of its kind, and under the incentive of a great and noble idea Parliament poured out money upon it very freely. "Every part of the prison, visible or invisible, is a mine of building wealth. Hidden amongst its hundreds of cells, its length of corridor and passage, beneath its acres of roof, are, without exaggeration, miles of lead piping, hundreds of tons of iron, immense iron girders, gates in dozens—some of wrought iron, some of cast—flag-stones without end, ship-loads of timber, millions of bricks. When the old place comes to be pulled down, the curious inquirer may perhaps understand why it was that it cost half a million of money." Every cell in the place—and there are about 1,000 of them—cost £500—enough to build a nice little suburban villa. The cost of the new prison at Wormwood Scrubbs is reckoned to be £84 5s. per cell.—Churchman.

The Mines of Soap. — The wonderful natural soap mines at Owen's Lake, California, are accounted for by the following theory, which has been advanced by a well-known Western scientist: The water of the lake contains a strong solution of both borax and soda. In the water a curious specimen of grub breed by millions. These grubs go through their various transformations, and finally emerge as short-winged, heavy-bodied flies, very fat and oily. They live but a few days, dying and falling into the lake in such numbers as to be frequently washed ashore in layers more than a foot thick. The oily substance of the dead flies blends with the alkali of the borax and soda, and the result is a layer of pure soap, corresponding in thickness to the drift strata of the dead flies, a foot deep of the flies making a layer of soap nearly an inch thick. These strata, repeated year after year, have formed the celebrated "Soap Banks of Owen's Lake," where a large force of men have been constantly employed for a number of years. — Cincinnati Commercial-Gazette.

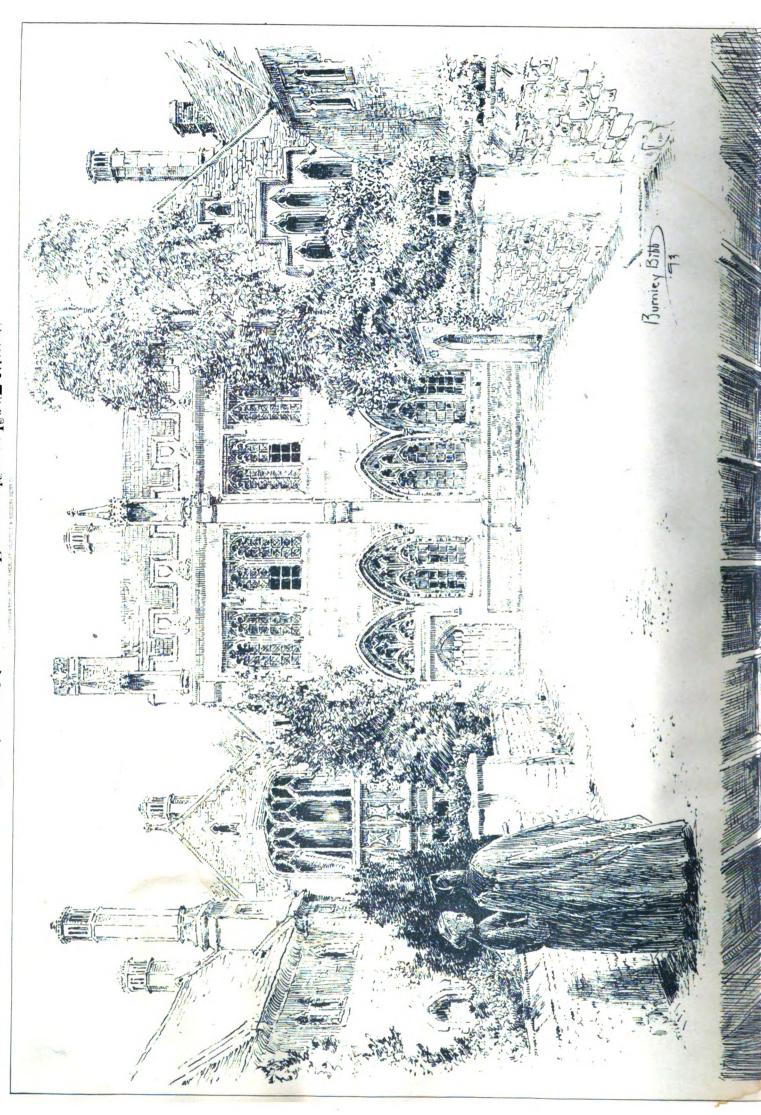
In Memory of Duban. — A memorial of Jacques-Felix Duban, the architect, has been set up in the vestibule of the theatre which contains Delaroche's painting of the great artists of Europe in the Ecole des Beaux-Arts, Paris. It consists of a pedestal of white marble, designed by M. Bernier, and a bronze bust, sculptured by M. Eugène Guillaume. There is especial appropriateness in having a memorial of Duban in the school, for he was associated with the buildings during his whole career as an architect. Soon after his return from Italy, in which he studied as a winner of the Prix-de-Rome, he was appointed about 1830 as inspector on the works of the school. From 1832, he was the architect. It was under his direction the covered court, the theatre, the library, etc., were constructed. In 1858, he began the works on the part facing the Quai, including the Salle Melpomène. To his ability the school owes the remarkable attractiveness of its numerous buildings, and it was fitting that future generations of students should be able to realize the appearance of an artist who was so thoughtful about their Alma Mater. — The Architect.

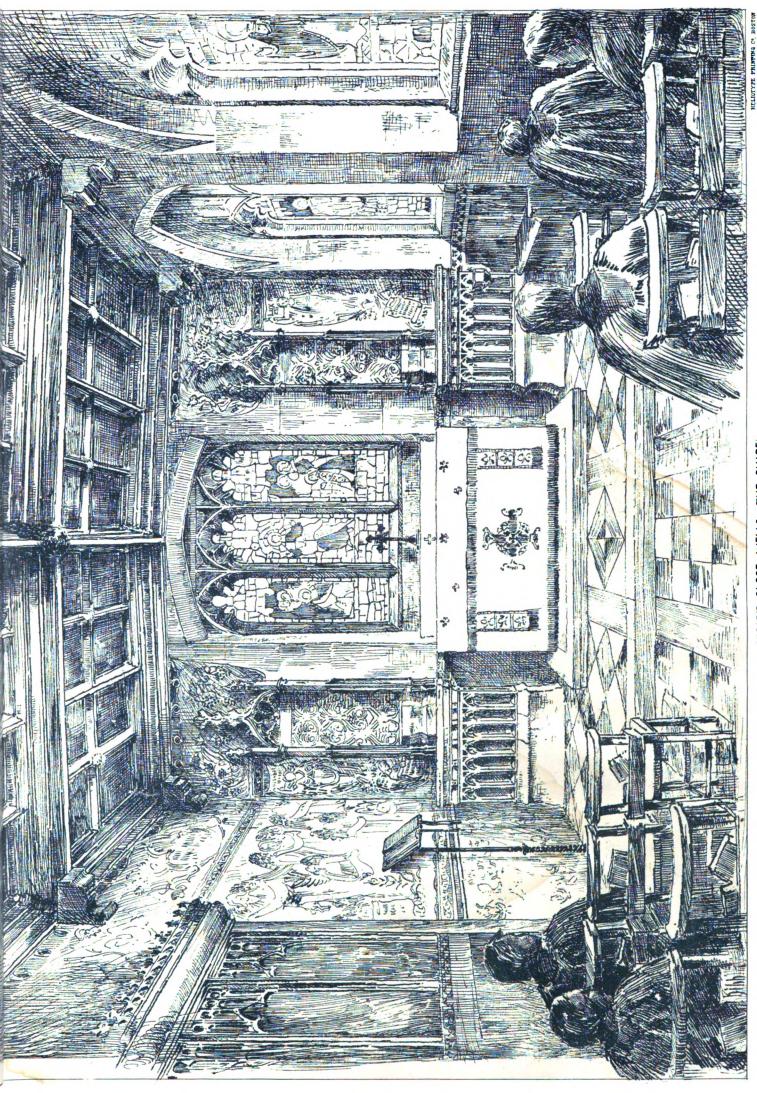


VICAR'S CLOSE, WELLS

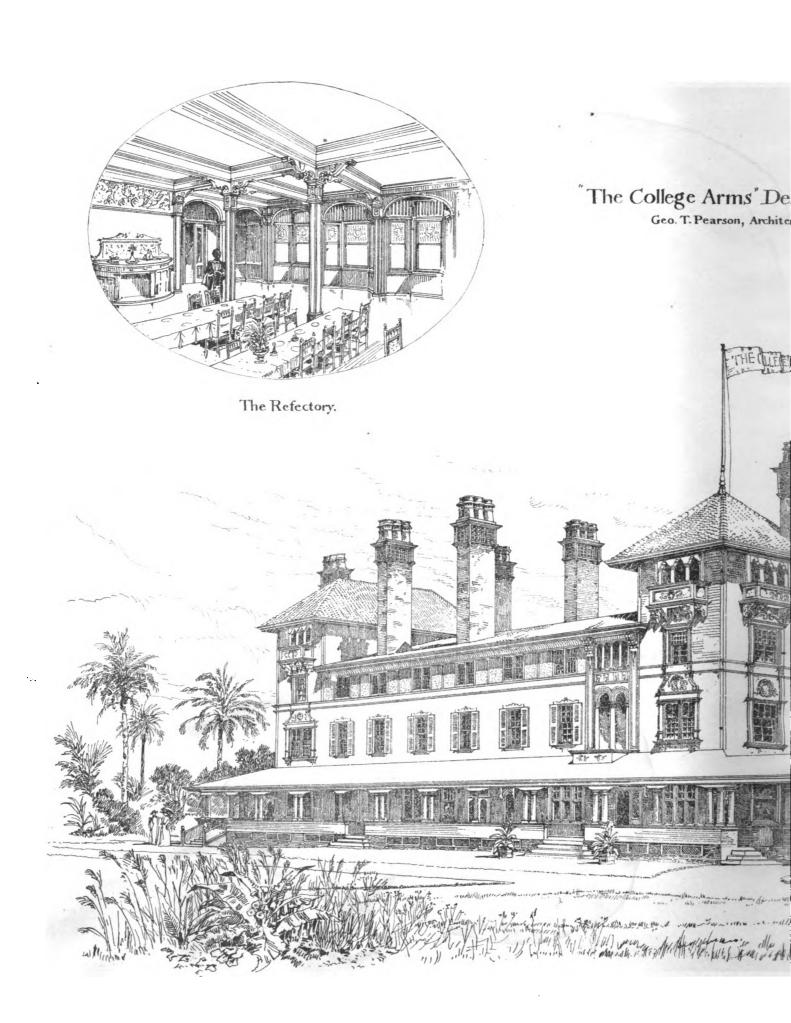


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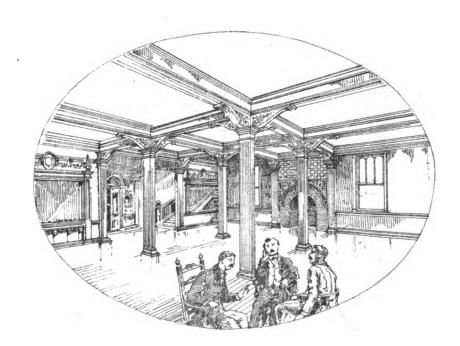




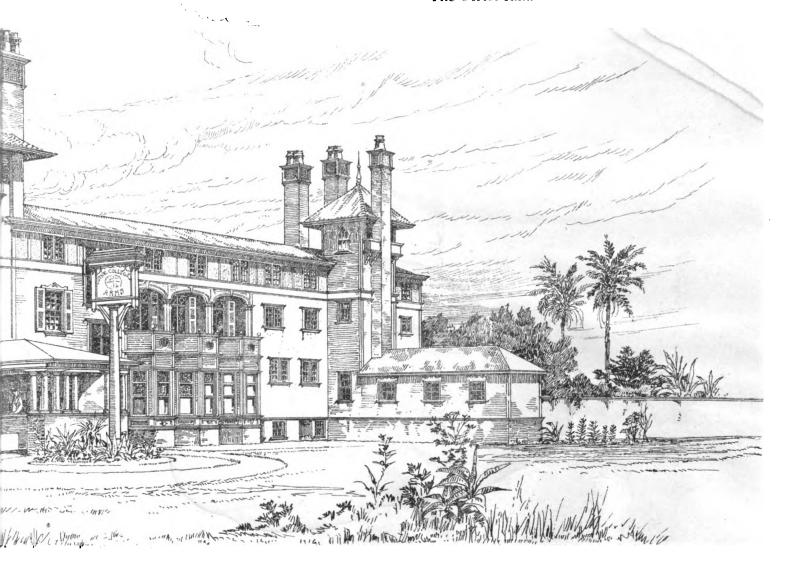
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Land Florida.



The Office Hall.



Entered at the Post-Office at Boston as second-class matter.

DECEMBER 1, 1894.



Summary:—

The Results of the New York Tenement-house Commission's Inquiry.—The Character of the Tenants of Tenement-houses.—Effect of the Tammany Overthrow on the New York Building Department.—Fall of an overloaded Floor.—Death of Mr. John Welch, Architect.—Death of Mr. William T. Walter, Connoisseur of Art.—How Mr. Walter discovered Bonvin.—Annual Report of the Boston City Architect.—Report of the New York Garbage Commission.—American "Factory-made" Designs for German Use.

Strains in Compound Framed Structures.—I.

Description of a Chatty Roof.

Colonial Architecture in Western Massachusetts.—II.

A Dutch Co-operative Town.

The Hotel Carnavalet, Paris.

Jetty and Lumber.

Construction.—XXV.

Societies.

Illustrations:—

House of Daniel Baugh, Esq., 16th and Locust Sts., Philadelphia, Pa.—The Hollister House, Greenfield, Mass.—The Alexander House, Springfield, Mass.—Details devised by Mr. Asher Benjamin.—Church for the First Parish, Brighton, Mass.—Decoration in the Vestibule of the Tomb of G. P. Morosini, Esq., Woodlawn Cemetery, New York, N. Y.

Additional: The Bank for Savings, Fourth Ave. and 22d St., New York, N. Y.—The Columbus Monument, 8th Ave. and 59th St., New York, N. Y.—A Shop-front in East 17th St., New York, N. Y.—Arncliffe, Headingley, Eng.—Hall, Arncliffe, Headingley, Eng.—Entrance, Maryland House, Headingley, Eng.—Billiard-room Chimneypiece, Maryland

HE proceedings of the New York Tenement-house Commission are interesting although it mission are interesting, although they do not promise, as it seems to us, very tangible results. At the last meeting, the dirtiness of such houses appears to have been the principal theme of conversation, after that of the rents. One witness testified that the rent of tenements in New York was twice as great as in London, which, if true, only proves that the tenants of such houses fare much better than those of independent dwellings, the annual rent of which in New York would nearly buy the freehold of a similar mansion in England. Possibly this reflection occurred to some of the members of the conference, for the discussion immediately wandered off to the dirt question, and a clergyman, who had had much experience in tenement-house relief, said that fifty barrels of dirt were taken from a single tenement-house in his district, in the course of the operations undertaken last winter to give employment to needy persons. After the horror caused by this revelation had subsided, a lady, connected with the College Settlement, observed that she thought the tenants themselves were partly to blame for the untidy condition of their dwellings; and the Secretary of the Church Temperance Society, Mr. Robert Graham, acknowledged that much of the evil condition of tenementhouses was owing to the unthriftiness of the women living in

HE last admission, as it seems to us, marks the approaching return of common-sense to the tenement-house discussion. We have had enough, and more than enough, of affecting rubbish about the landlords of tenement-houses, and their oppressed victims who are unable, because of the rapacity of capitalists and the neglect of a cold world, to bring their bodies and their habitations into that state of perfect purity for which they yearn; when the fact is, as every one knows, and will say so freely when the deluge of cant has passed by, that two-thirds of the inhabitants of New York tenement-houses believe the application of water to the skin to be injurious, and have never used a piece of soap, or a mop, in their lives, unless compelled thereto by the prejudices of some "oppressor." We once had a controversy with a tenant, a

man of very respectable character, too, who insisted on keeping a calf in the cellar of his house. There was no reason why he should do so; he had the use of a large barn, but the calf liked to stay in the cellar, and he liked to have him, and he could not see why the landlord, or any one else, should object to this comfortable arrangement. This man was reputed to be worth twenty thousand dollars, and was probably worth more, yet he preferred the company of his little calf, dirt and all, to the incomprehensible delights of baths and disinfectants, and there are millions more of very good people who agree with him. We, that is, the small fraction of mankind who have studied these things, know that dirt, in the long run, brings disease and unhappiness, and we could tell the hero of the calf episode that the death of his pretty daughter, which nearly broke his heart not long afterward, was probably hastened by neglect of the sanitary precautions of which he thought so lightly; but it is folly to begin by assuming that he and his like really long for scrubbing-brushes and Turkish-baths, and are only prevented from enjoying them by the machinations of landlords. The fact is that the tenement-houses of our cities ought to be cleaned, and kept clean, not because the people who live in them want them so, but because it is dangerous to the health of other people to have them dirty; just as persons who carry on offensive manufactures are restrained, not because they wish to be, but for the sake of other people; and if this is to be done effectually, the fact should be recognized that it must be done against the will of the tenants, and that, if the cleanliness is to be maintained, some sort of force will have to be applied to the very people who will profit most by it.

HE overthrow of the Tammany Hall party in New York people who have suffered extortion and oppression from petty officials, but who have not dared to complain, for fear of the terrible revenge which these banded ruffians had it in their power to visit on them. Among other persecutions, those practised in the name of the Department of Buildings are now likely to be disclosed. It is no secret that it is prudent to add a certain percentage to the estimated cost of building in New York, to cover the expense of facilitating the necessary transactions with the officials whose approbation is required; but the owners and architects rarely know how this money, which is usually entrusted to a contractor or foreman, is expended. A correspondent of the Evening Post, however, lets in a little light on the subject by recounting two actual occurrences. Not long ago, a man desired to add a bay-window to the front of his house on Fifth Avenue. The window was planned, keeping well within the restrictions imposed by the city ordinance, and it appeared as if nothing was necessary but to make a contract and have it built. Just then, however, a representative of the Building Department appeared on the scene, and forbade the construction of the window. He had no authority, so far as appears, either to forbid or consent to it, but, rather than have this question referred to the courts, for decision some years hence, the owner made an amicable arrangement with the official, by which the latter, in consideration of two hundred and fifty dollars, changed his mind in regard to his rights and duties in the premises, and allowed the building of the bay-window to proceed. In another instance, a lady wished to extend the dining-room of her house. The rear wail of the room had just been torn down, preparatory to moving it farther out, when "the representative of the Department to Discourage Building" called, and forbade the prosecution of the work, on the ground that the wall was "unsafe." The lady, in much distress, consulted the contractor, to see whether the wall could be restored to its old condition, and the extension given up. The contractor assured her that a hundreddollar bill, handed to the official, would at once remove his objections; and the experiment was tried, with complete success.

CURIOUS accident took place a few days ago in Newark, N. J. A wholesale bakery occupied a two-story building, measuring about sixty by forty feet on the ground. In the rear part of the upper story were stored two hundred barrels of flour, and twelve hundred bushels of rye. Some seventy bakers were at work in the first story, and four or five masons were repairing a wall in the cellar, when the upper

floor gave way, and fell, carrying the first floor with it into the What became of the bakers in the first story is not stated, but of the masons in the cellar two were badly hurt, and may die of their injuries. The newspapers, with their usual carelessness, say that the weight on the upper floor was estimated at "thirty tons," and that the police thought it was overloaded. When a floor falls down, it is generally safe to presume that it was overloaded, but the newspaper figures leave us quite in the dark as to the amount of the overloading. It is obvious that two hundred barrels of flour, and twelve hundred bushels of rye would weigh nearer sixty tons than thirty, so that we cannot say whether the character of the load or its weight is misstated. Supposing the flour and grain to have been confined to half the floor area of the upper story, the load, if they weighed thirty tons, would have been only fifty pounds to the square foot, a mere trifle for any floor; while, at sixty tons, it would have been only one hundred pounds per square foot. It is hardly necessary to say that accuracy in such statements is very desirable. When men are killed or hurt by the falling of overloaded floors, some one is to blame; and the proper placing of the blame, or of the penalty, if the case is serious, depends upon having the facts correctly stated.

R. JOHN WELCH, formerly a prominent architect in Brooklyn, N. Y., died suddenly a few days ago, at the age of seventy. Mr. Welch was a Scotchman by birth, and was trained to his profession in Scotland and England. His first important building in this country was a church at Newark, N. J., built in 1859. From that time until recently he had been chiefly engaged in church-building, his best-known work being Dr. Talmage's Tabernacle, built in 1872.

R. WILLIAM T. WALTERS, one of the best-known collectors of objects of art in the United States, and a generous and discriminating patron of artists, died at his home in Baltimore a few days ago, at the age of seventy-four. Mr. Walters's artistic tastes were the development of a strong natural instinct, to which the circumstances of his early life gave little scope. He was born in a little logging town in Pennsylvania, where his father was the storekeeper and general moneyed man, and was sent to Philadelphia to be educated as a civil and mining engineer. Beginning work in his profession just as railroad-building commenced in Pennsylvania, he surveyed several of the new lines, and located coal-mines in various parts of the State. While still very young, he gave up engineering and came to Baltimore, where he established himself as a wholesale liquor and commission merchant. He was very successful in business, and in the investments which he made of his savings, and accumulated a great fortune, amounting now, as is estimated, to ten million dollars. Very early in life, he began buying works of art, and his gaileries now contain one of the largest and most valuable private collections in this country. In 1861, he went abroad, where he remained four or five years, living much among artists, and gaining a thorough acquaintance with French art in particular. Returning to this country, he was chosen by Mr. Corcoran as a Trustee of the Corcoran Gallery at Washington, and was made Chairman of the Purchasing-committee, and represented the United States as Commissioner of Fine Arts at the Paris Expositions of 1867 and 1878, and the Vienna Exposition of 1873. He published, in 1885, a critical notice of Barye, and published also a collection of "Notes upon Certain Masters of the Nineteenth Century." He was also interested in Percheron horses, and did much to introduce them into this country, and published a book on the subject, which he translated from the French.

N interesting story is told of a part of Mr. Walters's collection. While he lived in Paris, he often went into a little restaurant, frequented by artists, and kept by a man named Léon Bonvin. One day, Bonvin modestly told Mr. Walters, whom he knew to be a kind-hearted picture-lover, that he had tried his hand at "some little things," which he would show him, if he wished. Mr. Walters politely replied that he would like to see them, and Bonvin brought out some seventy-five small pictures, mostly studies of flowers, painted with a sentiment and talent which the experienced collector instantly recognized. He bought at once sixty out of the seventy-five pictures, paying the modest artist much more than he asked for them, and carried them off. A few days later

Meissonier, who had heard from Mr. Walters of the artist of the restaurant, made his appearance, and asked to look at the pictures. Bonvin brought out those that remained. "Why did you not tell me that you could paint?" said Meissonier, reproachfully, and bought them all. Three months later, poor Bonvin died, and the collections of Mr. Walters and the Meissonier heirs contain all that represents a great artist.

YE have had the Annual Report of the Boston "Architect Department" lying for some time on our table, waiting for a favorable moment for examining it with the care it deserves, and it is a pleasure to be able to say that we find it more interesting and satisfactory than ever before. We have, in general, a low opinion of official architecture, but Mr. Wheelwright has certainly an extraordinary capacity for com-bining the administration of the business part of his office with close control of the artistic part, and the designs, which are illustrated in the book by excellent heliotypes, and by reproductions of the pretty perspective sketches for which the Boston City Architect's office is celebrated in the profession, show anything but the stereotyped monotony of ordinary official architecture; while some of the buildings, as, for example, the Austin Farm Chapel, the Contagious Diseases Hospital, the Warren Square Hook-and-Ladder House, the Pierce Farm buildings, and the Fire-Department Headquarters, are of remarkable interest. One of the most curious and instructive portions of the book is the transcript of the accounts with the new buildings of the year. The appropriation is placed on the credit side, and the buildings are debited with all expenditures on them, including contracts and extras, and crediting the deductions for omissions. Every item is put down with the utmost frankness, and we commend the account to people who think that the ordering of extras is an unpardonable sin in an architect, as a good illustration of the way in which a careful and intelligent architect studies his work as it goes on, adding a little to the contract here, and saving something there, but, by this revision, constantly bringing his building nearer to the ideal of economy and utility.

HE Garbage Commission appointed by the Mayor of New York to consider the subject of the disposal of the garbage of that city has submitted its report, in which it says, unhesitatingly, that the present system, under which ashes and garbage are dumped into the harbor, should be abolished, as "unqualifiedly bad," and a new system substituted, under which householders should be compelled, as is done in Boston, to separate ashes from kitchen refuse, or garbage proper, and the true garbage should be treated by some good "reduction" or utilization process, the mineral portions being shipped to suitable points around the harbor, and used for filling. As the city has a large amount of garbage, some eight hundred tons, to be disposed of daily, the Commission, observing that some time will be required for making the necessary preparations, advises that steps be taken at once to invite proposals for removing and treating the garbage, so that the system adopted may be in working order by next summer.

WRITER in the Deutsche Bauzeitung, who has been 1 travelling in the United States, is much impressed with the variety of illustrated books, containing plans and perspective drawings for houses of moderate cost, which he has found there. Reflecting that the taste for independent dwellings is very prevalent in Germany, he thinks that books of this sort would be useful there, and he takes pains to furnish a list of the authors and publishers of those that he has found, with their addresses; so that "The Saving and Sensible Architectural Bureau," of Cleveland, and the authors of a large number of works on "Artistic Homes," "Sensible Low-Cost Houses," "Practical Modern Houses," "Artistic Onestory Houses," have had a gratuitous advertisement which we hope may be of profit to them. He gives a page of illustrations, mostly reproduced from the books of which he treats, which do not give a very high idea of the beauty of the "Practical" and "Sensible" and "Low-cost" designs, or of the excellence of their planning, but the average German "Einzelwohnhaus" is about as devoid of æsthetic attractiveness as a structure can well be, while its planning is primitive to the last degree, so that even the factory-made designs at which real American architects laugh may give new and valuable ideas to the builders of suburban cottages in the great German manufacturing communities.

STRAINS IN COMPOUND FRAMED STRUCTURES.1-I. DEFINITIONS AND CHARACTER OF STRUCTURES.

IM-EMDERS-ORCHARD IMDIANA

HE structures under treatment are assumed to consist of a combination of secondary trusses or frames composed of longitudinal or meridional members, chords, placed at the corners of the polygon, to resist the bending strains from the transverse force, wind, and to support the vertical forces, weight of construction and superimposed load.

Horizontal struts, joining one chord with another, form the sides of the polygon and subdivide the structure into zones or sections; they are to resist the transverse or shearing force and deformation of the polygonal frame, as also the components from the vertical forces in pyramids; these will be termed "ring struts."

The tendency to deformation of the panels of each zone formed by the chords and ring struts, caused by the shearing force, is resisted by diagonal members, either struts or ties; tension members, only, will be considered in the following analysis.

The deformation of the horizontal polygonal planes, already men-tioned, that lie between each zone is resisted by any convenient systioned, that he between each zone is resisted by any convenient system of bracing. An interlacing of tension members, placed between every alternate joint of chords and ring struts in the plane, has been adopted in what follows: These will be called "ring ties." These, in a sense, rigid planes transmit the shearing force, acting at the plane, equally to all the joints at the corners of the polygon, where it is resisted by the respective diagonals and chords in proportion to their efficiency, depending upon their respective coincidence with the direction of the external forces affecting them.

GENERAL PRINCIPLES OF STATICS APPLIED.

All forces acting at a joint shall balance each other.
 The resultant opposing the displacement of members meeting at a joint is central at the middle of the joint.

3. A compound or primary structure may be subdivided into a combination of simple or secondary trusses or frames to resist the external forces. In such combinations the same members may often form parts of different frames.

4. When the same member forms at the same time part of two or

more different frames, the strain on it is the resultant of the several strains to which it is subject by reason of its position in the sev-

5. In compound structures, several frames, without being distinguishable into primary and secondary, are combined in such a manner that certain members are common to two or more of them, their

strains are to be determined as in §4.

6. When the forces act all in one direction, the magnitude of their resultant is their sum, and their resultant will pass through their com-

mon centre-of-gravity.
7. When the forces act in contrary directions: Find separately the magnitude and resultant of the forces which act in two contrary directions, respectively; if the two resultants are unequal, find the final resultant; if they are equal, they form a couple, and have no single force as a resultant.

8. When the centre-of-pressure is at the centre-of-magnitude of the pressed surface, the intensity will be uniform throughout the

surface

9. When the centre-of-pressure varies simply as the perpendicular distance from a given axis, the pressure will be uniformly varying.

10. In compound framed structures, composed of secondary frames

combined into a primary, each secondary frame will have its own axis of rotation; their common axis, that of the primary frame, may or may not be at the centre-of-gravity of the plane of rotation as in a homogeneous body.

11. If a frame be acted upon by any system of external forces, and if that frame be conceived to be completely divided into two parts by an ideal surface, the stresses along the members which are intersected by that surface balance the external forces which act on each

side of the two parts of the frame.

12. If not more than three members are cut by the ideal surface, the problem is determinate; if more than three members are cut, the problem is or may be indeterminate.

¹ By Francis Schumann, Engineer. Theory of strains in compound framed structures: Applicable to towers or piers, prismatic or pyramidal or both combined, polygonal in plan, subject to transverse and vertical forces.

EFFICIENCY OF THE WEB TO TRANSMIT STRESSES.

The theory generally accepted for the flexure of beams of solid section is deficient in that it ignores the efficiency of the web porsection is deficient in that it ignores the emiciney of the web portions for transmitting the stress from fibre to fibre and ultimately to the flanges or outer fibres. By reason of a want of homogeneity and a consequent diminished efficiency, other than uniformly varying stresses may occur in the section; the axis of rotation, or neutral axis, may not pass through the centre-of-gravity of the section but along side of it.

alongside of it.

In framed beams, especially such as contain intermediate chords, the members between the chords, constituting the web, assume an importance, paramount with the chords, for resisting the bendingmoment; the shearing force first asserts itself to be resisted by the web, which in turn transmits to the chords, to be finally held in equilibrium by the reactions at the points of support.

When the web bracing of the subdivisions of a framed beam, which are formed by a series of chords, are of equal efficiency, the inner chords, that is those nearest the neutral axis, cease to act as members to resist bending directly, but become web members to

members to resist bending directly, but become web members to transmit transverse forces to the outer chords, which finally resist the total bending-moment caused by the transverse forces. Were the beam a cantilever, for example, the reactions at the points of support would be null for the inner chords, whilst the outer ones would have reactions equal to the bending-moment. The inner chords have reactions equal to the bending-moment. The inner chords may come into action to resist bending, if the web divisions vary in efficiency to transmit the transverse forces.

The maximum efficiency of a web is where the plane in which the members lie coincides with the direction of the external force; the efficiency decreases with the inclination between them. in point would be a cantilever, rectangular in section, composed of four chords, one at each corner, braced with ties and struts, four chords, one at each corner, braced with ties and struts, subject to an external transverse force which would cause the axis of rotation to be at an angle of, say, 30° with one of the sides; the two sides least inclined to the force would be more effective than the others. The proportion of the total bending-moment transmitted to the points of support by a web and its chords will be as its efficiency. Thus, the plane embracing the diagonals of a side perpendicular to the external transverse force would be inefficient and insamble of transmitting any bending moment. and incapable of transmitting any bending-moment.

APPLICATION TO PRISMS AND PYRAMIDS.

When the structure is subject to vertical forces only, the strains in diagonal and ring struts of a prism will be null, and the vertical forces will be resisted equally by the chords acting as columns; whilst in pyramids, the ring struts and chords will resist the horizontal component of the vertical forces and vertical forces respec-

In prisms, the axis of rotation of the moments from the transverse forces will pass through the centre-of-gravity of the horizontal plane, whilst in pyramids, with web bracing, it moves towards the side from which the forces act, being due to the diminished efficiency of the web of the opposite sides of the polygon; the transverse forces being assumed to be normal to one of the sides of the polygon with an even number of sides.

In a pyramid the efficiency of the diagonals, in the sides, inclined to the direction of the force, tend to diminish towards the apex, hence the centre of action of the external transverse forces, or lever arm of the bending-moment of the respective side is shorter than in a side having more efficient diagonals.

Each side of the polygon, treated separately, will have its own axis of rotation and the common axis of rotation for the combined

axis of rotation and the common axis of rotation for the combined sides will be at their common centre-of-gravity.

Pyramids without web bracing, to which belong the apex portion of any pyramid, are treated similarly to prisms, each side is considered as a secondary truss or frame. When a side of a pyramid is developed to a normal plane, upon which the lever arms are measured for the bending-moments, the strains found will give reactions in the same plane of development; the vertical reaction for the primary or combined structure will be the reaction in the plane multiplied by the cosine of its inclination, when in final position, with a vertical. with a vertical.

with a vertical.

The reactions from the bending-moment in an apex of a pyramid, or one without web bracing, the chords forming a joint, are directly as their distances from the axis of rotation, which will pass through the centre-of-gravity of the polygonal plane of rotation.

When a pyramid surmounts a prism, the strains in each should be obtained separately; the vertical reactions from the moments in the pyramid being first determined and applied to the prism as external forces. Without separate treatment the determination of resultants and strains at the joints of intersection of the prism and pyramid become complicated and confusing.

As heretofore stated, the horizontal plane between the zones must

As heretofore stated, the horizontal plane between the zones must be capable of resisting deformation; they transmit the total shear-ing force, acting at the plane, to the joints at the corners of the

polygon.

The efficiency of a diagonal in the sides of a pyramid inclined to the direction of the transverse force, varies as the cosine of its inclination, on a horizontal projection, with the direction of the transverse force. Where the inclination is 90°, the diagonal ceases to act, and where the inclination is 0° or parallel to the force, it is of maximum efficiency.



CROSS SECTION ON A.B

Scale 4 F! = 1 Inch.

METHOD OF PROCEDURE FOR OBTAINING THE STRAINS, SPECIALLY APPLICABLE TO OCTAGONAL STRUCTURES: JOINTS HINGED.

1. Proportion the transverse forces, from the wind, acting as a shearing force at each joint of the horizontal plane, in accordance with the efficiency of the diagonals affected.

2. Develop, separately, each side of the structure, constituting secondary trusses or frames, in which the strains differ, to a normal plane, being the two oblique sides on the windward and leeward sides of the structure and the sides parallel to the direction of the

wind; the sides perpendicular to the wind, being, in effect, null.
3. Proceed to determine the strains by any desired method, analytical, graphical or otherwise, using for external forces the allotment found for each separate side of the octagon developed; the development of a side being now a plane in line with the direction of the force.

4. When the strains have been obtained for each separate division of the octagon, conceive the sides to be united on a line central with the chords, in which the strains will now be the resultant of

the strains found when separated.

5. The strains obtained for the secondary frames, whose planes are inclined to the direction of the transverse force, must provide for the decrease in efficiency of the members when in their final position in the structure.

1. The horizontal planes must be sensibly rigid to resist deformation

The total shearing force, existing at a plane, is transmitted by it

2. The deformation of the sides of the zones is resisted by their respective diagonals in a ratio depending upon the inclination of their vertical planes (of inclined sides with force) with the

direction of the external force. 3. The reactions resulting from the trans-verse force at the apex portion of a pyramid will vary as their distances from the axis of rotation, which coincides with the centre - of - gravity of the horizontal plane from which

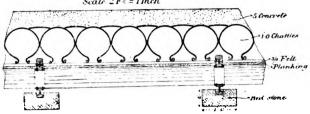
the apex springs. 4. The vertical forces, when their centre-of-action coincides with the vertical axis of the structure, will be equally divided between the eight chords.

(To be continued.) DESCRIPTION OF A CHATTY ROOF.

IRST and foremost the object of using chatties is to have the coolest roof possible, as it will be seen in the section that ventilating holes are left in the walls so that there may be a constant circulation of air throughout the roof.

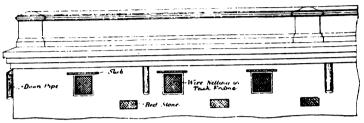
concrete in the middle of roof, as also making a girder sufficiently strong enough to bear the weight of roof-covering

PART LONGITUDINAL SECTION ON C. D. Scale 2F4 = 1Inch



The spacing of these having been decided upon, planking is laid on the bottom flanges of the upper rail (as in section) and ex-

PART ELEVATION



tending throughout the roof, thereby making this a kind of ceiling as well, the width of planks being between 4½" to 6", and the thickness decided by the weight of roof and spacing of girders.

3. Over these,

} inch felt is laid, and again over the felt the chatof 12" ties. height, are placed (mouths downwards), and as shown in both plan and section.

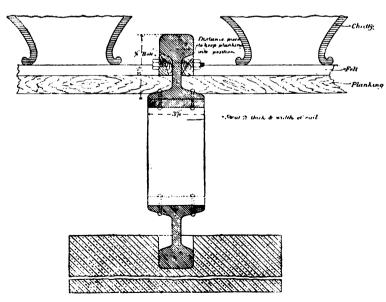
The space formed between four chatties by covered earthen pans. made to exactly

cover the opening so formed, which will then bring the whole roof to a tolerably even surface.

4. When these have been laid, the concrete is proceeded with, but great care is required in beating this down, as it requires gentle beating until pretty well set, after which it may be treated as for ordinary terraced roofs, when there will be no fear of the chatties breaking. This is probably the greatest objection to a chatties breaking. This is probably the greatest objection to a roof of this kind, but with careful supervision a reliable roof can be

5. The object of the felt is to deaden the weight coming onto

ENLARGED SECTION AT A.



The roof itself is practically double and is made as follows: The section here shows the use of single-headed steel railway rails for girders, made in the form of a truss, in order that the slope of the roof may not be given by increasing the thickness of

the planking during the consolidation of concrete, without which both the planks and chatties would be liable to damage.

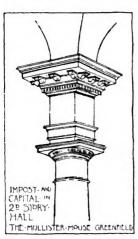
6. Between each set of girders ventilating holes are left in the outer walls (as in section and elevation), to allow of a constant

circulation of air, and thereby keeping the roof always cool. The openings to be covered with wire netting on teak frames to prevent

the ingress of birds, etc., into the roof.

7. It will be seen in section that the concrete is not allowed to enter the parapet wall, but is kept distant from it three-fourths of an inch. The ends of concrete are made to curve upwards and, to prevent the water from topping this, the inner side of parapet wall is projected over, and a continuous range of tiles cemented on to it and extending to the top of the concrete, the whole afterwards being plastered. The object of this is to prevent the concrete from cracking by the expansion and contraction of roof materials, especially when iron is used, it having been proved that the concrete entering or even touching the walls is the cause of one-half of these roofs leaking, and the only way to prevent this is to allow it to move with the roof during the expansion or contraction of the materials comprising the roof.—D. Upson, in Indian Engineering.

COLONIAL ARCHITECTURE IN WESTERN MASSA-CHUSETTS.1—II.



F the distress occasioned by the War of the Revolution, the inhabitants of Western Massachusetts bore their full share, for though they were not exposed as were the dwellers on the coast to Great Britain's navy, and their comparative isolation and and their comparative isolation and slight numbers secured them in a large degree from the more important movements and designs of the enemy, they made up a part of the frontier close to that debatable ground, which witnessed the most bloody and barbarous conflicts in the struggle with the mother country, and the Indian allies of the British were a potent factor in their dread, for the generation was still living and active which had seen and felt the horrors of Indian warfare. The very strongholds which had been the colonists' defence

the trails and roads which they had opened, became, on the breaking out of the war, their greatest danger, and an enemy could strike from the depths of the forest about them more terribly than from the wide expanse of the Atlantic. With the fall of Bourgoyne came some relief from immediate peril; but Canada lay always to the North—a continual menace until the war had

So it was that there was but little important building done here during the Revolution — at its close the country was exhausted, and Western Massachusetts bore its share of the general exhaustion. But though many fortunes had been lost, others had been gained; while the war crippled many industries, it built up nearly as many others, and many of these latter were exceedingly profitable ones,



and the natural result of this state of affairs showed itself in the latter part of the eighteenth century in the building of many new houses, larger and more elaborate than any that had gone before. Houses, too, which stood out from the majority in sharper lines of

contrast to their neighbors, for until this opportunity presented itself for the accumulation of wealth, the money in these communities had been much more evenly divided. Then, too, the war had moved the people about geographically as well as socially; they had gone from the country to the city, and come from the city to the country, and

JAMB

FRAME

DILL

CLAPBOARD BOAR

DLIND

so it was that new ideas and innovations were brought

Even before the Revolution, Boston and its vicinity had apparently had an "Art awakening": the introduction to the "Town and Country Builders Assistant," published at "shop near Boston near Boston Stone," by J. Nor-an, Architect, man, Architect, seems to indicate a movement of this sort. He says in this "Introduc-tion" to the vol-"Introducume of plates and texts, which he frankly remarks are "made familiar to the meanest ca-pacity": "The greatest pleasure that Builders and workmen of all kinds have of late

yearf taken in the Study of Architecture, and the great Advantagef that have accrued to those for whom they have been employed, by having their Workf executed in a much neater and more magnificent Manner than was ever done in this Country before, has been the real Motive that induced me to the Compiling of this Work for their future Improvement.

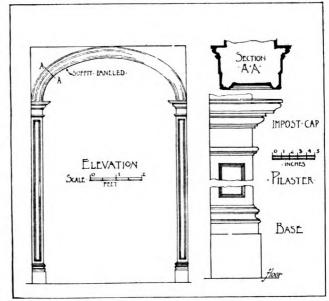
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their future Improvement.

"Besides as the study of Architecture if truly delightful in all its Process, its practice if evidently of the greatest Importance to Artificers in general, and its Rules so easy as to be acquired at leisure Times, when the Business of Day is over by way of Diversion; Tis a Matter of very great surprise to me how any Person dare presume to discourage others from the Study thereof, and render them very often less ferviceable to the Public than so many Brutes. But to prevent this Insection from diffusing its possenoid effluvia's any surther, and in consideration that amongst all forts of people there are some in whom nature has implanted that noble Faculty of the Soul called REASON WHEREBY WE JUDGE OF THINGS, I have therefore, at very great expense, compiled this Work for the common Good fore, at very great expense, compiled this Work for the common Good of all Men of Reason" etc.

This "awakening," the Revolution by its before-mentioned shift-



Archway in Hall, Springfield, Mass.: 1800.

ing about, undoubtedly spread, and one of its results in this region was the publication at Greenfield, in 1797, of the "Country Builders Assistant," by Asher Benjamin. As nearly all of the existing "Colonial" work later than 1793 probably owes what it has of artistic merit either to this eminently practical little volume, or to the author

¹ Continued from No. 977, page 100.

The Colton House, Agawam, Mass.

should be # wider than the trim and the cornice

for f of the trim.
Plate 11 shows "Ionic and Corinthian Frontf . . with all their parts figured for practice which if plain to inspection.

Plate 14 "if a group of cornicef, and to pro portion them to roomf or any other place re-quired, divide the whole height of the room in twenty-two, twenty-four, or twenty-fix parts, and give one of those to the cornice. . . . If used on the outfide of build-ingf, divide the height into nineteen or twenty partf, one of which will be the height of the cornice."

Plates 15 and 16 are

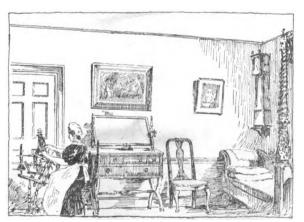
Plates 15 and 16 are of pedestals and imposts, the proper depth of the latter being \(\frac{1}{10} \) or \(\frac{1}{10} \) of the height from the floor to the springing of the arch. While Plates 19 and 20 are chimney-pieces drawn to scale with their details "half size." Of the remaining plates in the book, eight are devoted to the explanation of the orders; there are one or two plans and elevations of houses and a church, details of

staircases, doors, windows, etc., in fact, all that an intelligent builder a century ago really needed.

Of the earlier books printed about this time, some earlier, some later, —"Builders' Jewels," "Gentlemen's and Builders' Repositories," "Builders' Companions"—I know of none that approach as closely

"Builders' Companions"—I know of none that approach as closely the Colonial spirit, as it is embodied in this region, as Benjamin's little book. His plates are poorly done, but here is the translation of the Classic into the vernacular — Jones and Wren adapted to the necessities of pastoral New England.

Just about the time that Benjamin published this book, he built for Mr. Samuel Coleman, of Worcester, the house in Greenfield now owned by Mr. Hollister. It is one of the best examples of the work of its time in this part of the State. Coleman failed before the house was done, (let us hope that the architect was not one of the causes of the failure), and the house was finished by the creditors. Their of the failure), and the house was finished by the creditors. Their economy is manifest in the house by the hanging of $\frac{7}{8}$ doors in frames that are rebated for $1\frac{1}{4}$ doors. The building is nearly square frames that are rebated for 14" doors. The building is nearly square with two large rooms on either side of the central hall, which runs directly through the house having at the rear end a wide door, a counterpart of the front door, which opened on to the lawn and



Room in the Alexander House, Springfield, Mass.

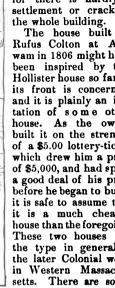
garden at the back end. The kitchens, pantries and serving-rooms were all contained in an L at the rear, which was built at the same time as the original house. The hall with its coved ceiling cut by semicircular arches which are carried by delicate Ionic pilasters is a very satisfactory piece of work, and the finish in each of the first-

The book contains thirty copper-plates with a "Printed Explanation to each," which, taken all together, give a pretty thorough exposition of the construction and artistic detail of a house in those days. A half dozen of these plates I have redrawn; for, intended as they were for working details, they are not without interest.

Plate 1 is mainly of door and window trim, which the author states should be $\frac{1}{2}$ or $\frac{1}{8}$ of the width of the door or window. The frieze over the door or window should be $\frac{1}{2}$ wider than story rooms and nearly all of the chambers is evidently carefully

It must have been thoroughly well built, for there is hardly a settlement or crack in

The house built by Rufus Colton at Agawam in 1806 might have been inspired by this Hollister house so far as its front is concerned, and it is plainly an imi-tation of some other house. As the owner built it on the strength of a \$5.00 lottery-ticket which drew him a prize of \$5,000, and had spent a good deal of his prize before he began to build, it is safe to assume that it is a much cheaper house than the foregoing. These two houses are the type in general of the later Colonial work in Western Massachusetts. There are some of the large, square, gable and gambrel roofed houses, but they



are all like the ones built earlier, except that their front entrance nearly all resemble the ones which Benjamin shows in his little book, instead of the heavy broken-top pediments like that in the Colton house at Longmeadow. The flat hipped roof was evidently the fashionable roof in those days.

In 1811 was built the Alexander house in Springfield and this

house marks the beginning of the Greek revival, in this part of the country at least. Here, again, Asher Benjamin was the architect, and he seems to have spent some part of his time since he built the Greenfield house in the study of Greek work. All his curves in the mouldings about the house, inside and out, are Greek and the acanthus leaves in the composite capitals have become sharp and spiky; he has grown artificial, too, for clapboards on the outside no longer content him for his façade. It is now smoothly covered with matched boards; his balusters have disappeared and slender straight matched boards; his balusters have disappeared and slender straight sticks, geometrically arranged, have taken their place. The interior of the house shows these changes too, for the trim throughout is like that which became common fifteen or twenty years later — a flat single member with five beads and imitation corner-blocks, with a small rosette in the centre, though this trim unlike later work is

There are a half dozen houses still scattered about Springfield, built from five to fifteen years later than this one and evidently more or less copied from it, which show that this set the fashion, for more or less copied from it, which show that this set the fashion, for a time, for the rest of the town. But with this house — possibly indeed with the type illustrated in the Greenfield and Agawam houses, the Colonial architecture so far as it has any individuality ends. After this time the misuse of the materials of which the houses were built became so apparent and so great that the later work is merely interesting as a thing to be avoided.

The earlier work is not always constructed on the best scientific principles nor with a view to special economy of materials and labor

principles nor with a view to special economy of materials and labor, as the little sketch of an eighteenth-century window-frame indicates, but it is far more logical in many ways and certainly better architecture than the later work — at least so far as wooden construction went, and wood was almost exclusively used in this part of the country. Of brick buildings erected before the early twenties in this least to the country than a construction went, and wood was almost exclusively used in this part of the country. locality, there are almost none. Fortunately much of this later Colonial work has been thoroughly well preserved and the houses illustrated stand much as they were when they were built. The additions which were made to them forty or fifty years ago have been taken away and there has been very little cutting of new windows and putting up of new partitions, with the attendant barbarities of new doors and window-trim, which so often disfigure the house of that region house of that period. GEO. C. GARDNER.

ELECTRIC CLOCKS. — The revenue to the Western Union Telegraph Company for furnishing the time of day to this country amounted last year to about \$1,500,000. The Company has a telegraph desk in the Naval Observatory in Washington. Four minutes before noon the wires of the system all over the United States are cleared of business, and the instant the sun passes the seventy-fifth meridian, electricity carries the news to every city. — Pittsburgh Dispatch.



A DUTCH CO-OPERATIVE TOWN.



GNETA PARK, which stands on the outskirts of the little town of Delft, in Holland, exhibits the pleas-antest phase of one of the most interesting of all the antest phase of one of the most interesting of all the various attempts that have yet been made to secure a solution of the labor problem, says the London Times.

With the Park itself the most prosaic of visitors cannot fail to be charmed. It is some ten acres

in extent, and is divided into two parts by a stream of water which broadens in the centre into a lake, bridges maintaining the connection between the two sections. That on the left is well wooded, while that on the right is devoted to flower-gardens, recreation-grounds, and more especially to dwellings, alike for employers and employed, who live here together in a manner quite patriarchal, amid surroundings almost idyllic in their aspect.

The largest of the houses is that of the managing director of the adjoining Netherlands Yeast and Spirit Manufactory, while the smaller houses—constructed with separate entrances, to accommo-

smaller houses - constructed with separate entrances, to accommodate two, four or six separate families, as the case may be — are occupied by the work people.

There are one hundred and fifty of these smaller houses, arranged in "streets" or terraces, or as detached or semi-detached dwellings, in "streets" or terraces, or as detached or semi-detached dwellings, between which one gets glimpses of a thoroughly characteristic Dutch landscape in the background. Each has its bit of garden, which is often gay with flowers, and as there is an abundance of trees in every direction, the general effect is pleasing in the extreme.

The total population of the Park is, children included, about four hundred; but a considerable number of the employés live elsewhere, owing to lack of accommodation for all of them, or other reasons

hundred; but a considerable number of the employes live elsewhere, owing to lack of accommodation for all of them, or other reasons. It is, literally, only a stone's throw from the larger house to the smaller, and the "rounds" are as much those of the workmen's houses as they are those of the more pretentious dwelling of the managing director. Near to the lake is an open space, in the centre of which is a well-constructed band-stand, where an orchestra, manual by the workmen themselves, performs twice a week in the manned by the workmen themselves, performs twice a week in the interests alike of the community and of any of the townspeople who care to listen to the music and wander about the promenades which the Park offers.

the Park offers.

On the lake, boating goes on without seriously disturbing the swans which have their habitat there; and elsewhere one finds playgrounds with swings, etc., for the children, and a "summer casino," bowling-alleys, and archery grounds for their elders. But especially one remarks a large building, known as the "Community," which forms the centre-point of the "life" of the Park. Here is a hall that can be used for festivals, balls, lectures, exhibitions, concerts and meetings, being capable of seating 1,200 persons, though it is generally divided by partitions so as to form a reading-room and a gymnasium. Then, too, there is a variety of smaller rooms used for a kindergarten for the juvenile residents of the Park, for evening classes and for various educational and other purposes. Space is classes and for various educational and other purposes. also found for a library of four thousand volumes.

Friendly gatherings of all sorts take place here, from the annual "Festival of Labor and Brotherhood" each 30th of July, down to magic-lantern entertainments for the young people. Still another feature of the Park is its cooperative stores and bakery, which are

magic-lantern entertainments for the young people. Still another feature of the Park is its cooperative stores and bakery, which are available not only for the resident population, but for ordinary dwellers in the locality as well.

Agneta Park owes its establishment to Mr. Van Marken, the managing director of the Netherlands Yeast and Spirit Company, founded by him in 1869. That gentleman has ideas of his own concerning the relations which should exit between employers and employed. He believes that the conditions under which workmen live may have a great effect on their development, both personal and as workmen, and that it is to the direct interest of those who employ them to see that they are provided with "homes" in the truest sense of the word — homes, that is to say, which will not only fulfil every requirement of sanitary laws and convenience, but be positively attractive in themselves.

The matter is thus regarded by him as one of more than mere philanthropy. In fact, in all that he has done for his work-people, Mr. Van Marken discards any motive of "philanthropy," and seeks to look at everything from a business or a common-sense point-of-view. "The moral and material improvement of the workingman," he holds, "must increase alike his zeal and his strength, and hence genfer a practical benefit on the source." Having these and a

of-view. "The moral and material improvement of the workingman," he holds, "must increase alike his zeal and his strength, and hence confer a practical benefit on the employer." Having these and a variety of other ideas on the subject of workingmen's homes, and finding that the dwellings available in the town of Delft were not what he thought they should be, he bought, in 1884, the site of Agneta Park, and had it laid out and the various buildings erected

on it.

But his idea was that the whole should eventually become the property of the community. Hence, having purchased the land, he formed a limited-liability company, with a nominal capital of 160,000 florins, and himself bought from the company three hundred and twenty shares for 32,000 florins. He then sold the land to the company for 29,000 florins, the amount he actually paid into the company's exchequer, in addition to transferring to them the site for the Park, being thus 3,000 florins, which formed the working-capital. The money for erecting the dwellings, etc., was raised by mortgage on property which, at the time, was really non-existent, so mortgage on property which, at the time, was really non-existent, so that a certain degree of confidence had to be shown in the matter.

The rents are now paid into a common fund, which is so arranged that, after the deduction of certain proportions for payment of interest and for gradually paying off the mortgages, there is a balance left, which is apportioned among the dwellers in the houses, according to the amount of their rent, and is devoted to buying up the shares in their names. In this way it is calculated that in the course of about thirty years the whole of the original cost will have been cleared off, and the Park, with the dwellings on it, will be held by the community, owing to the gradual transfer of all the shares into their own hands.

When that condition of things arrives, the householders will still pay their rent, as at present, but they will receive it back in the form of dividends on the shares held. This arrangement is thought to be an improvement on the ordinary building-society notion of enabling a man to become his own landlord. The possession of a house of one's own may have its attractions, but it is regarded as bringing trouble and inconvenience as well, more especially in the case of a workman who may wish to remove to another town, or of one who dies and leaves, perhaps, his widow to dispose of the house as best she can. In each instance there is involved not only the question of inconvenience, but of the payment of law expenses as

well.

By making the Agneta Park houses the property of the community as a whole instead of the work-people as individuals, these drawbacks are avoided. When a tenant leaves, or dies, his share is disposed of through the directors to some other tenant, and he or his widow will receive the full value of it without any trouble and without any deductions on account of legal expenses. It is, also, to without any deductions on account of legal expenses. It is, also, to the interest of the community, as a whole, to see that no particular tenant neglects his property, or becomes a source of annoyance to others, as he might do if the house he lived in were actually his own. Thus it is claimed that under the Agneta Park system there are all the advantages of a workman becoming, in course of time, his own landlord, and none of the disadvantages, either to himself or other people.

THE HOTEL CARNAVALET, PARIS.

Carnavalet Museum, installed in the house in

Carnavalet Museum, installed in the house in which Mme. de Sévigné so long resided, is to be enlarged by the addition of the old Paris residence of the Le Pelletier St. Fargean family. It was known before the Revolution as the Hôtel St. Fargean. The Hôtel Carnavalet, or Carnavalet House, was an elegant palace, built as far back as the reign of Henri IV by Bullant and Androuet du Cerceau. When Mme. de Sévigné rented it, the neighborhood of the Marais was going out of fashion. Marie de Medici had, in building the Luxembourg Palace, drawn the wealthy and aristocratic classes into the St. Germain suburb. They had there better air, and could afford themselves the luxury of large gardens and larger rooms than in what was then old Paris, or Paris within the old fortification-walls. Religion was the fashion, and convents sprang up side by side with the new palaces of the aristocracy. The part of the city in which Mme. de Sévigné resided was still the abode of many great families. But its most notable denizens belonged to the legal profession, or to Mme. de Sevigne resided was still the abode of many great lamines. But its most notable denizens belonged to the legal profession, or to the fiscal or fine arts world. Thus the architect of the Palace of Versailles built himself a house in the Rue St. Honoré, a good deal to the east of the Palais Royal. Mignard became his neighbor. The Le Pelletier St. Fargeans were hereditary Judges of the Parliament of Paris, or high court of judicature. They were a numerous family. Each branch had a house in the Rue Culture St. merous family. Each branch had a house in the Rue Culture St. Catherine, or the street of the gardens of St. Catherine, now Rue de Sévigné. One of them, in the reign of Louis XV, was Advocate-General, and drew up the charges on which the edict was based, ordering the expulsion of the Jesuits from France. He became the heir of the different properties of his cousins, and had the different houses pulled down to build on their site the Hötel St. Fargean, which the first receipen of cichtenth courture carbitations. houses pulled down to build on their site the Hôtel St. Fargean, which is the finest specimen of eighteenth-century architecture, perhaps, in Paris. It has only two stories—the ground floor and the first floor,—but the ceilings are so high-pitched that the roof is nearly on a line with the five-story houses around. Nothing could be more majestic than the carriage-entrance. The court-yard contrasts, by its imposing elegance, with the more delicate style of that of the Hôtel Carnavalet. As to the vestibule and staircase, they are palatical. The stairs must have afforded a hewitching spectagle when tial. The stairs must have afforded a bewitching spectacle when the Advocate-General, St. Fargean and his wife were receiving comthe Advocate-General, St. Fargean and his wife were receiving company. They belonged to the tip-top society of Paris, though not of the Court or Versailles circle, but the Orleans, the Condé, the Contifamilies would have accepted invitations to their entertainments. When their house was new, the judicature was in opposition to the Court, and looked for leadership to the Duc d'Orleans. The banisters are in forged iron, and of priceless value. All the State-rooms and the living-rooms open on each other, and on corridors running behind them. The former afford a stately perspective, and seem of endless length. The windows are as high as those of the mirror-gallery of Versailles. Versailles.

A suite of what, in the Advocate-General St. Fargean's time, were State-rooms, are to be devoted to a library dealing with the history of Paris and of its Revolutions, while the Hôtel Carnavalet is to be devoted to these subjects. The two old residences will be united by

The suites of small, or living-rooms, are to be appropria gallery. The suites of small, or living-rooms, are to be appropriated to engravings, maps and plans. When great personages formerly wanted to be snug, they lived in small rooms in which there was hardly room to turn round. Those of the Queens of France, at Versailles, were well-named the "cabinets" of the Queen. One of the advantages was, that the inmates could converse audibly without the advantages was, that the inmates could converse audibly without raising their voices. Dr. Sée tells us that heavy food causes Bright's disease, and that a premonitory system of that malady is a buzzing in the ears, and hardness of hearing. I dare say that Bright's disease was very frequent among those who attended the gay suppers given by the Regent at the Palais Royal. The disease must have existed, though it had never been diagnosed. Louis XV, who began to lead a fast life at twenty-five, found at thirty-five that he liked conversation better in little rooms than in big. In the grand apartments of his palace, courtiers had to stand far off when speaking to him. In the small apartments, or cabinets, they had to stand close to him. The laws of geometry there overbore the laws of ing to him. In the small apartments, or cabinets, they had to stand close to him. The laws of geometry there overbore the laws of etiquette, and the increasing deafness of the King was not made manifest. He went on gormandizing with Marshal de Richelieu and Marshal de Soubise, who lost every battle he ever was engaged in, but invented an immortal onion sauce. The King had a little kitchen close to his cabinets, where he could toss pancakes and cook game according to toothsome recipes furnished by De Richelieu and De Soubise. Le Pelletier St. Fargean's small living-rooms were also contiguous to a tiny kitchen, in which members of his family could imitate the royal example, and be out of the ear-shot of servants.

Parisians of quality of the olden time greatly differed from English men and women of their rank and time, in their aversion to having servants present at their jollifications. They liked to talk freely. The servant, they felt, was a hostile watcher and listener, and so The servant, they felt, was a hostile watcher and listener, and so they got rid of the valet, and even, sometimes, of the cook. The first "lifts" that were ever made were to hoist up through trap-doors dishes from kitchens to dining-rooms. The "dumb-waiter" stood beside the table to receive the emptied plates and dishes, and was let down by the lift. Attendance was thus dispensed with. Beaumarchais gives one a notion in "Le Mariage de Figaro" of what the domestics in great houses were, in the eighteenth century. Hebert, the revolutionist, who started that scurrilous journal, Le Père Duchesne, and, as Procurator of the First Commune of Paris, brought those infamous charges against Marie Antoinette, was a valet de chambre, and had never any masters that were not aristobrought those infamous charges against Marie Antoinette, was a valet de chambre, and had never any masters that were not aristocrats. One sees at the Hôtel St. Fargean what ample provision the Advocate-General of Louis XV made, to dispense with servants when he gave his petits diners and petits soupers. The late Prince Consort had an eighteenth-century taste for small dining-rooms and no servants. He never felt snug when dining in a large room. — E. C. in the N. Y. Tribune.

JETTY AND LUMBER.

founders of Boston spoke Tudor English.
Their names for all sorts of things were extremely picturesque. At the same time they were specific. They used the term "jetty" precisely as we use the word projection; but they confined the word to projections from buildings. When Robert Turner put up the house which occasioned the deflection of Beacon Street at the corner of Somerset Street, he lowed to have his new house to jet out farther into the tion of Beacon Street at the corner of Somerset Street, he was "alowed to have his new house to jet out farther into the streat." The permit was given on the 5th of October, 1652, and became memorable in the history of Beacon Street, which was intended originally to go up Beacon Hill, reaching the top where the State-house extension now stands. Nor was it bad English to say that his house might "jet out" into the street. We say "jut out"; but the men of 1652 were right. The word jut is corrupted from jet. It is as gross a corruption as it would be to say projuction, instead of projection. The word jet, and the derivative jetty, emanate from the same term, still retained in projection. instead of projection. The word jet, and the derivative jetty, emanate from the same term, still retained in projection. This word may have come into English either from mediæval Latin or from the French. It was naturalized at an early day. The first dictionary of English, the "Promptorium" of 1440, has the word, and dictionary of English, the "Promptorium" of 1440, has the word, and tells us that it denotes the projecting upper story of timbered houses. When Banquo praises Macbeth's castle, he does not fail to mention the jutty with the frieze, the buttress and other things. In 1663, the Town of Boston made a rule that "no jetty nor pendill that shall be erected, but shall be full eight foot in height from the ground, upon penalty of twenty shillings a week, after notice given to the contrary." Frequently these jetties were supported by pillars. When these pillars stood in the street, the town charged an occupation fee. When the jetty was not part of the house frame, it was called porch. In 1658, Captain Waldren received a permit "to set up two pillars under his porch, and to pay two shillings every first of March to the Town Treasurer." In Boston, Massachusetts, the Tudor period of rich English, comfortable living and affluence ended about 1720. rich English, comfortable living and affluence ended about 1720. Up to that year the town had grown steadily, and enjoyed what in 1659 was called "unparalleled enjoyments." This expression was to say emphatically that from 1630 to 1720, Boston was in its heyday, architecturally and otherwise; after 1720 a period of stagnation and decline set in, and was not overcome until after 1790.

A time of growth and joy is always reflected in language. Tudor period of Boston, 1630 to 1720, abounds in happy terms,—some brought over from England, others created in Boston. The point where the Charles, the Mystic and the harbor of Boston meet, was called "Centre Haven," a name of infinite beauty. The chief was called "Centre Haven," a name of infinite beauty. The chief article of trade in early Boston was wood in all its forms, especially for fuel and building purposes. The article had to be brought to Boston by boats. These boats, with their cargoes of masts, ship timber (Boston was a great shipbuilder), sawed wood and fuel were apt to discharge at random. The harbor front and wharves were accordingly "lumbered up" with all sorts of forest products, to the inconvenience of the public, which travelled preferentially by boat and frequented the wharves relatively more than we do. It was for this reason that the earliest Boston police, in addition to the constables, were the water bailiffs. They had to perform important harbor, wharf and shore duties. In 1663, they were instructed to "clear the ends of all streets and wharves that but upon the water, "clear the ends of all streets and wharves that but upon the water, from all lumber and other goods." This is the first use of the word lumber for sawed wood. The Boston Town order of April 27, lumber for sawed wood. The Boston Town order of April 27, 1663, called the sawed wood, the timber (hewn), the masts and other wood brought to town by boats "lumber," because the cargoes lumbered up the harbor-front. The new meaning was immediately adopted, and lumber, in the sense of sawed wood, is the least restricted, as well as among the earliest of all Americanisms. The men of Boston before 1720 coined many words of interest to builders. "Lean-to" is a typical Boston word. But the point of chief interest is that Boston and Colonial architecture flourished from the very beginning, that there was a joyous growth up to about 1720, and that the age of the Georges was, on the whole, a period of decline so far as Boston is concerned. In that age of relative decline the monuments of Colonial Boston were incontinently and ignorantly destroyed. The relics of our Tudor age, if I may apply that term to Boston from 1630 to 1720, are most precious. They tell of a great age, since forgotten. Fortunately, the written documents of our heroic and romantic age, from 1630 to 1720, have survived the period of decline which is properly called the Provincial age of Boston.

Boston, November 5, 1894.

Boston, November 5, 1894.

CONSTRUCTION.1 - XXV.

IIS was always their custom, however, these builders carry the consequences of an established principle to its utmost limits; they do not seem to understand those obstacles which our modern art places in the way of bold attempts in the shape of the academic veto. onstruction is not for them that science which consists in saying: "Here are the rules, here are the examples, follow them out, do not go beyond them." On the contrary, Science for them says: "These "here are the rates, here are the examples, thow them out, do not go beyond them." On the contrary, Science for them says: "These "are the general principles, they are broad, they indicate nothing "but methods. In their application extend them as much as the "material and your experience allow you; we ask nothing of you "except to remain faithful to these general principles; moreover, "everything is possible to him who knows how to apply them." Is that a stationary art, hieratic, alien to the modern spirit, as they have undertaken for so long a time to make us believe? Is it retrograding to study it, to investigate it? Is it the fault of this art if very many imitate only the exterior appearance of it, if they compromise its further development by maladroit copies? Do we impute to antiquity the bad copies of its art? Why then blame the arts of the Middle Ages in France for the false applications which have been made of them, whether in Italy before the Renaissance, or at home in our own time? Since the moment when it was admitted that there was no architecture except in Italy, since the architects have flocked like sheep marching in each other's footsteps, to study their art in that country, academic instruction has been willing to see the Middle Ages only there. But the mediæval edifices in Italy, from the structural point-of-view, evince but a passable comprehension of the subject. Almost always they are nothing. but constructions derived from Roman antiquity, invested with a pretty bad covering borrowed from the arts of the North or the Orient. Assuredly it is not necessary to cross the Alps to study that. For construction, there are neither settled principles nor coherence, but a disordered mass of confused traditions, influences which combat one another, a barbarous love for luxury alongside of evident feebleness.2

What are these basilicas in Rome for example, reconstructed for the most part in the thirteenth century, if they are compared to the edifices built here at home at that epoch? Miserable brick walls, badly put together, on fragments and capitals torn from antique monuments. In these barbarous structures, where is the study? If we consider them with respect and curiosity, is it not because they monuments.

¹ From the "Dictionnaire raisonné de l'Architecture Française," by M. Viollet-le-Duc, Government Architect, Inspector-General of Diocesan Edifices, trans-lated by George Martin Huss, Architect. Continued from No. 975, page 83. ² A single example to show that we do not exaggerate. We have noticed in this article as a result of what persistent efforts the constructors of the North mastered the thrusts of vaults and in what conditions they were satisfied with the stability of these vaults. But, in Italy, the spreading of the arches of vaulted monuments during the Middle Ages and even the Renaissance is pre-vented by exposed fron bars at their springings. At this rate one can easily dis-pense with the whole train of flying-buttresses and devices to secure equilibrium. They take good care neither to show these iron bars in the drawings which they give us, nor to speak of them in their treatises on the subject. But, in truth, is that a method of construction? Is it not rather a confession of inability?

offer us the spoils of magnificent edifices? If we marvel before rich stolen jewels, in a palace, is it the thief who excites our admiration? Let us then be sincere and put things in their right places. If the Romans of the Middle Ages found a soil covered with antique débris; if the Baths of Caracalla were still standing and almost intact up to the thirteenth century, as well as the Colosseum, structures on the Palatine and so many other edifices, shall we go out of our way to admire the works of men more barbarous than the Vandals and the Huns, who have in cold blood destroyed these monunnents in order to erect bad buildings, in which these débris them-selves are unskilfully used, coarsely handled? We see in all this only the vanity of a powerless people; intelligence, ideas, art itself are completely wanting. What a different spectacle in this country! The lay architects in France were then laboring assiduously; without a thought for their personal glory, they sought only to develop the principles which they had discovered; they believed that the future was theirs and this was not an illusion, for they were the first to commence in the modern era the great struggle of intellectual man against brute matter. The constructors of antiquity are the allies and frequently the slaves of matter; they are subject to its laws; the lay constructors of mediæval times declare themselves its antagonists; they maintain that mind ought to gain the mastery and render it subject and that it will obey. It is indeed to be expected that we who pierce mountains so as to travel easier and faster, who no longer pay any attention to distances and who defy natural phenomena, should scorn those who, by their inquiring and subtile spirit, their disinterested faith in principles based on reason and calculation (disinterested certainly, for scarcely have the names of even a few of them come down to us) have been centuries in advance of us and who have only made the mistake of living too early, of being too modest and of having believed that other people would understand them. They tell us that history is just; we hope so; but its justice sometimes has to be waited for a long time. We admit that from the twelfth to the fifteenth century, political society is in disorder; the cleary were resurrous, the cleary were resurrous. is in disorder; the clergy were usurpers, the feudal lords were tyrants, kings were sometimes pliant, sometimes false and always ambitious; Jews were usurers and the peasantry were miserable brutes; that this society is permeated by ridiculous superstitions and pays little attention to morality; but we see quietly appear in the midst of this chaos a class of men who are neither monks, nobles, nor peasants, seizing upon the most abstract art—the one which lends itself to calculations, to logical developments; the art to which every one must have recourse, for it is necessary that people shall be lodged, protected, defended, shall make temples, dwellings and fortresses. We see this class attract to itself all the artisans and submit them to its discipline. In less than half a century this association of indefatigable workers discovered entirely new ciples, capable of infinite extension; it has brought into all the arts analysis, reasoning, investigation, in place of routine and decrepit traditions. It establishes schools; it goes on without stopping a single day, isolated, but systematized, tenacious, subtle, in the midst of anarchy and general indecision. It mounted the first steps of the modern industry, of which we are with good reason proud; and because of the fact that this association devotes its time to work, instead of inditing memoirs in its own praise; because its members, more solicitous of making their principles triumph than of obtaining personal glory, write their names on a few stones; that by reason of researches they even arrive at abusing these principles; because finally this association is overwhelmed under the last three centuries whose vanity at least equals their distinction, shall we be so ungrateful to-day as not to recognize what we owe it, so senseless as not to profit by its labor? And wherefore this ingratitude, and this foolishness? Because a few lazy minds secure in their positions pretend to preserve the principles of a dead art, which they take good care not to put into practice; which they do not even clearly announce? Who are the retrograde minds? Are they those who would con-demn us to reproduce for ever and ever the incomplete or ill-digested attempts made by the last three centuries to regenerate the architecture of the Romans, or those who seek to restore to honor the resources of an art at once systematic and audacious, lending itself to all the combinations and to all the developments necessitated by the The balance of varying requirements of modern civilization? the history of the arts would be exact if it were held by an impartial hand, if, instead of names, deeds were put into its scales, monuments in place of individualities. What have we, in fact, to offset such name, it, instead of names, deeds were put into its scales, monuments in place of individualities. What have we, in fact, to offset such names as Dioto Salvi, Arnolpho di Lapo, Brunelleschi, Michelozzo, Baltazar Peruzzi, Bramante, San Micheli, Sansovino, Pirro Ligorio, Vignola, Ammanati, Palladio, Serlio, Jean Bullant, Pierre Lescot, Philibert Delorme, Ducerceau, and so on? Two or three names scarcely known; but if our French mediæval monuments could scarcely known; but if our French mediæval monuments could speak; if they could give us the modest names of their authors—if, especially in face of the works of the men we have just cited, they could show us all the mysteries of their construction, then assuredly history would do them justice and we should cease to be the dupes, to our own detriment, of a mystification which has lasted through more than three centuries.

Occidental Europe can boast with good reason of having provoked the great intellectual movement of the Renaissance and we are not among those who regret this return towards the arts and the ideas of Pagan antiquity. Our century follows that of Montesquieu and Voltaire; we do not renounce those great minds, — we profit by their perspicuity, their love for truth, reason and justice; they have

opened the way for criticism, they have extended the domain of intelligence; but what do they teach us? Is it, perchance, to subject ourselves to eternally reproducing their ideas, to conform ourselves without scrutiny to their personal tastes, to share their errors and their prejudices, for they are no more exempt than others from these? That would be to understand them very poorly. What do they say to us on every page? "Enlighten yourselves, do not stop, "put to one side opinions already made; these are almost always "prejudices; intelligence has been given to man so that he may ex-"amine, compare, collect, choose but not conclude, for to conclude is "to end; and he is a fool who pretends to say: 'I have closed the "human book!'" Is it then the particular task of a given philosopher that should be taken for a model, or his way of reasoning, his method? Voltaire does not like the Gothic, because Gothic art belongs to the Middle Ages, whose last prop he undermines: that only proves that he knows nothing of this art and that he obeys a prejudice. That is a misfortune for him; it is not a rule of conduct for artists. Let us try, if we can, to reason as he does; let us bring to the study of our art his spirit of analysis and criticism, his good sense, his ardent passion for that which he believes to be just; and we shall succeed in finding that mediæval architecture is founded on new and fruitful principles, different from those of the Romans; that these principles may be more useful to us to-day than are the Roman traditions. The rare spirits who have acquired in their times a great influence are like torches which illumine only the spot where they are placed; they can only enlighten distinctly that which surrounds them. But shall we say that there are no more objects in the world than those on which they have shed their light? Put them in other surroundings, — they will shed upon other objects the same light. But we are thus constituted in France: we look at the illuminated objects without noticing the torch, wi

wandered from our mediæval master-workman.

Let us come back to them, especially since they probably never suspected that it would one day be necessary to blacken so much paper, in their own land, in the endeavor to make their efforts and their progress appreciated. In advance of their century, by the breadth of their ideas and still more by their independence as artists; disdained by more enlightened centuries, which have not wished to give themselves the trouble to understand them; in truth, their destiny is hard. Will the day of justice for them never come?

The necessities of civil construction are much more varied than those of ecclesiastical construction; thus civil architecture affords the mediæval architects the opportunity of manifesting the numerous

The necessities of civil construction are much more varied than those of ecclesiastical construction; thus civil architecture affords the mediæval architects the opportunity of manifesting the numerous resources which are to be found in the principles by which they were governed. It is necessary to define fully these principles, for they have great importance. The architecture of the Romans (not that of the Greeks, let it be well understood) is a structure clothed with a decoration which thus becomes, in virtue of the fact, architecture, visible architecture.

If one undertakes to measure a Roman monument he must perform two operations: the first consists in taking account of the methods employed to rear the carcass, the construction, the structure itself; the second to find out how this construction has taken a visible form more or less beautiful, or more or less well adapted to this body. We have elsewhere given an account of this method.²

This system possesses its advantages, but it is frequently nothing but a clever falsehood. Roman construction can be studied independently from Roman architecture, and that which proves this is that the artists of the Renaissance studied that exterior form without taking account of the body which it covered.

The architecture and the construction of the Middle Ages cannot be separated, for that architecture is nothing else than a form commanded by that very construction. There is not a member, however minute it be, in Gothic architecture, at the epoch when it passed into the hands of the lay-workers, which is not prescribed by a constructive necessity; and if the Gothic structure is very varied, the needs to which it must submit itself are themselves numerous and varied. We do not hope to present to the eyes of our readers all the applications of the system of civil construction among mediæval people; neither can we undertake to show in outline the principal paths followed by this system; for one of the most striking qualities of mediæval art, as of manners, is its individuality. If one undertakes to generalize, he falls into the strangest errors, in the sense that the exceptions are more important than the rule; if he undertakes to give an account of some of these exceptions, he does not know which one to choose, and he narrows the picture. We can, we

¹ For those architects who have somewhat studied the arts of antiquity, the difference between the architecture of the Geeks and that of the Romans is perfectly well defined: these two arts follow opposite roads as we have said many times; but it is not so for the vulgar, who confound these two arts, just as if one was only a mere derivative from the other. How many times has it not been written, for instance, that the portal of Saint Gervais, at Paris, is a Grecian portal? It is scarcely more Greek than Roman. It is, nevertheless, on judgments as blind as this that the criticism of the arts of architecture has been based with us for a long time and that is because we, architects, perhaps from indifference, are the only ones in France who do not write about our art.

² See "Discourses on Architecture."

believe, bring out the principles, which are simple and rigorous and

pick out from among the applications those which best and most clearly express these principles.

The few examples which we have given show, we hope, the consequences of the principle received by the secular architects of mediæval times: manifestation of the means used in the structure of edifices and appearances really producing architecture — that is to say the visible form; solution of the problems met, by the natural laws of statics, of equilibrium of forces and by the employment of materials in the ratio of their properties; acceptance of all programmes, whatever may be their variety and subjection of the construction to these programmes, consequently of the architecture itself, since this architecture is only the frankly-admitted appearance of this construction. Having meditated on these principles, having chosen some examples among the applications of these principles, there is no architect who cannot construct, as did these mediæval masters, proceed as they did and vary forms in proportion to the new necessities which perpetually arise in a society like ours, since each new need should provoke a new application of principles. If we should be accused of wishing to cause our art to retrograde, it would be well, at least, to have it understood in what manner we intend to pull it backwards; the conclusion of all that we have said being: "Be true." If truth is a sign of barbarity, of ignorance, we shall be happy to be classed with those who are barbarous and ignorant and proud to have drawn some of our confreres with us.

[To be continued.]



SAN ANTONIO ART LEAGUE.

HE first exhibition of the San Antonio Art League took place last week, opening on Monday and continuing six days. The League is yet in its infancy, having been formed only last spring, but the Exhibition would have done credit to a much more mature organization, and, happily, received from the public the encouragement it deserved. The exhibits numbered over three hundred and comprised paintings in oils and water-colors, pastels, pen-and-ink sketches, sculpture, china-painting, wood-carving and tapestry, mostly work of the members of the League. The architectural subjects were unfortunately few in number, but these were well done, the designs for an Art League Building — a subject for competition — by P. M. Knight and A. B. Ayres being well drawn

In water-colors the work of Bernhardt Wall was noticeable, while in oils Mrs. A. E. Kroeninger, J. J. McCann, La Vern F. Wheeler and E. L. François were well represented by paintings of merit. A musicale was given each evening by the best talent of the city and the attendance was gratifyingly large.

The officers of the League are:

BURNHARDT WALL, President. MRS. A. E. KROENINGER, Vice-President. MRS. C. M. ROUNDS, Secretary. P. M. KNIGHT, Treasurer.

THE ARCHITECTURAL LEAGUE OF NEW YORK.

THE Tenth Annual Exhibition of the Architectural League of New York will be held at 215 West 57th Street, New York City, in the American Fine Arts Society's Building.

Exhibit entry-blanks returnable, Tuesday, January 29, 1895.
Last days for reception of exhibits, February 4 and 5, 1895.
Positively no works received after these dates.
Press View, Wednesday, February 13, 1895, 10 A. M. to 2 P. M.

Annual Dinner, Wednesday, February 13, 7.30 p. m. League Reception, Thursday, February 14, 8 p. m. Public Exhibition from Friday, February 15 to Saturday, March

9, 1895, inclusive.

The Exhibition will consist of:

Architectural Drawings in Plan, Elevation, Section, Perspective and Detail; Drawings of Decorative Works; Cartoons for Stained-glass; Models of Executed or Proposed Work; Completed Work, such as Carvings in Stone, Wood, Bronze, Wrought-iron, Mosaic, Glass, Textile Fabrics and Furniture; Sketches and Paintings of Architectural or Decorative Subjects.

Photographs will be admitted only when they serve to elucidate an accepted exhibit.

Plans, if neatly rendered, colored or blacked-in with indication of floors and ceiling, will receive equal consideration with the elevation and perspective, and large scale-drawings or details of some portions of the works are especially requested.

It will be the special object of this Exhibition to show complete illustrations of individual, rather than a larger number of incom-

desired.

Models of architectural sculpture and details are particularly

All exhibits must be properly labelled. Drawings must be either framed or mounted.

The omission of glass is suggested, as superior, for the purposes of this Exhibition.

Exhibits of non-resident members are to be sent to William S. Budworth & Son, 424 West 52d Street, and J. Harrison Mills, 147 East 23d Street, New York, who will deliver them at the Fine Arts Society's Building, and return them to the exhibitor at the close of the Exhibition.

The League will collect and return, free of charge to exhibitors in New York City, Brooklyn, Philadelphia and Boston, all drawings that have been entered; all other exhibits as above specified, must be delivered at the Fine Arts Society's Building, carriage prepaid

and ready for exhibition.

Collections will be made in New York City on Monday and Tues-

day, February 4 and 5.

In Brooklyn, Saturday and Monday, February 2 and 4.

In Philadelphia and Boston, Thursday and Friday, January 31 and February 1, 1895.

(Special arrangements will be made for the transfer of exhibits from the Pennsylvania Academy of Fine Arts as may be so designated on the League's entry-blanks, subject to the acceptance of such works by the League jury.)

SUB-COMMITTEE ON ARCHITECTURE.

GEORGE KEISTER, Chairman, 140 West 34th Street. Julius Harder, 194 Broadway. CHARLES A. RICH, 265 Broadway.

SUB-COMMITTEE ON DECORATION.

Daniel C. French, Chairman, 125 West 11th Street. Fred S. Lamb, 360 West 22d Street. FRANCIS C. JONES, 253 West 42d Street.

For the Committee on Annual Exhibition, GEORGE KEISTER.

Chairman Sub-Committee on Architecture.

The Eighth Annual Competition for the Gold and Silver Medals of the Architectural League will be held in connection with the Tenth Annual Exhibition of the Architectural League of New

CONDITIONS.

First. — The competitors must be residents of the United States, and under the age of twenty-five.

Second. - The drawings shall be made in conformity with the following programme, and entirely by the hands of the competitor.

The awards will be made under the direction of the Committee

on Competitions and Awards.

All the drawings complying with the conditions will be hung at the Exhibition, the first and second prize drawings being so indicated, and these latter shall become the property of the League.

PROGRAMME: THE MAIN STAIRWAY OF A NATIONAL LIBRARY.

The stairway, which is to start with a single flight on the axis, should be entered on the ground-floor through a spacious vestibule or entrance hall, and should lead to the main story where the large public reading-

rooms are placed.

The ground-story is to be twenty feet high, from floor to floor. The total width between the side walls of stairway is forty-five feet.

total width between the side walls of stairway is forty-five feet. The length is not given.

In an edifice devoted to learning, the first impression should be that of seriousness, and such as will prepare the mind for tranquillity and reflection. Literature, Science and the Fine Arts are suggested has te subjects of the decoration, which should be employed with moderation, and be impressive rather by its character than by its elaboration. It should be kept in mind that this is a problem of a monumental stairway, and not of entrance halls or reading-rooms.

The drawings are: Plan of the first and second stories to a scale of three-sixteenths-inch to the foot; longitudinal and transverse sections to a scale of three-eighths-inch to the foot.

The rendering: Wash-drawings, either in monotone or color. No perspective.

perspective.

Each sheet must be distinguished by a motto or cypher. A sealed envelope bearing the same motto or cypher must contain the name, full address, place and date of birth of the author, and must be mailed to the Committee on Competitions and Awards of the Architectural League, No. 215 West 57th Street, New York.

Diawings are to be delivered flat, carriage paid, at the same place on or before February 5, 1895. They will be returned at the close of the Exhibition at the expense of the contributor.

THOMAS HASTINGS,
WILL H. LOW,
GEORGE L. HEINS, Chairman,
215 West 57th Street, Committee on Competitions and Awards.

CLEVELAND ARCHITECTURAL CLUB.

THURSDAY evening, November 22, the Cleveland Architectural Club was organized with a membership of fifteen charter members and officered as follows: John W. Russell, *President*; Harry S. Nelson, *Vice-President*; Herbert B. Briggs, *Secretary*; B. S. Hubbell, *Librarian*; E. E. Noble, *Treasurer*; W. D. Benes and Wilbur M.

Hall, Members of Executive Board. These with Robert Allen, Frederick Baird, G. B. Bohm, P. G. Griffin, Williard Hirsh, Ray Rice, C. S. Schneider and Albert E. Skeel constitute the charter

The study of Architecture and the Allied Arts will be the object of the Club and any one interested in this study may become a

Meetings will be held on the first and third Thursday evenings of each month, the last meeting of the month being for competitions. The competition subject for December is: "A Stone Entrance to a Residence."

All communications should be addressed to the Secretary at 40 Blackstone Building, Cleveland, Ohio.

HERBERT B. BRIGGS, Secretary.

THE ARCHITECTURAL LEAGUE OF NEW YORK.

THE regular monthly meeting and dinner of the League will be

held at the Club rooms on Wednesday, December 5, at 6.30 p. m.
The Committee on Current Work has arranged with Mr. Wm. Paul

Gerhard to read a paper on "Improved Methods of House Drainage."

The drawings in competition for the Special Prize offered by the League, for a Scheme for the Decoration of the League Rooms, as set forth in the circular issued in October, will be on exhibition.

The following have been elected members of the League since the October announcement:

Resident. — William H. McCabe, Alex. S. Locke, Herman Behlen, Teunis J. Vander Bent, Arthur A. Hodges, Elmer Ellsworth Garnsey, Albert E. Davis, Irving P. Davis, P. Henry McDonough.

Non-Resident. — William S. Eames, C. F. Schweinfurth.

CHARLES I. BERG, Secretary.

SKETCH CLUB OF NEW YORK.

THE Sketch Club of New York will hold their Third Annual Exhibition next week at their Club-rooms, 1473 Broadway.

The Exhibition opens with a ladies' reception Wednesday evening, December 5, and will remain open the rest of the week.

In addition to the regular club work the exhibition will include

the drawings submitted at the first Inter-Club Competition of the Sketch Clubs of the country and at the first competition for the medal of the Beaux-Arts Society.

The exhibition is open to the public. All who are interested in

architectural art are welcome.

ALFRED F. EVANS, Chairman Exhibition Committee.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

SE OF DANIEL BAUGH, ESQ., 16TH AND LOCUST STS., PHILA-PHIA, PA. MESSRS. HAZELHURST & HUCKEL, ARCHITECTS, PHILADELPHIA, PA.

[Gelatine Print, issued with the International and Imperial Editions only.]

THE HOLLISTER HOUSE, GREENFIELD, MASS. MEASURED AND DRAWN BY MR. G. C. GARDNER, ARCHITECT, SPRINGFIELD, MASS.

SEE article elsewhere in this issue on "Colonial Architecture in Western Massachusetts."

MEASURED AND THE ALEXANDER HOUSE, SPRINGFIELD, MASS. BRAWN BY MR. G. C. GARDNER, ARCHITECT, SPRINGFIELD, MASS.

SEE article elsewhere in this issue on "Colonial Architecture in Western Massachusetts."

DETAILS DEVISED BY MR. ASHER BENJAMIN.

SEE article elsewhere in this issue on "Colonial Architecture in Western Massachusetts."

CHURCH FOR THE FIRST PARISH, BRIGHTON, MASS. CABOT, EVERETT & MEAD, ARCHITECTS, BOSTON, MASS.

DECORATION IN THE VESTIBULE OF THE TOMB OF G. P. MORO-SINI, ESQ., WOODLAWN CEMETERY, NEW YORK, N. Y. MESSRS. JARDINE, KENT & JARDINE, ARCHITECTS, NEW YORK, N. Y. THE decoration is the work of Mr. H. T. Schladermundt.

[Additional Illustrations in the International Edition.]

THE BANK FOR SAVINGS, FOURTH AVE. AND 22D ST., NEW YORK, N. Y. MR. C. L. W. EIDLITZ, ARCHITECT, NEW YORK,

[Gelatine Print.]

THIS structure is built of white marble.

THE COLUMBUS MONUMENT, 8TH AVE. AND 59TH ST., NEW YORK, N. Y. SIGNOR GAETANO RUSSO, SCULPTOR.

[Gelatine Print.]

This monument, the offering of the Italians of North America,

was unveiled October 12, 1892. The total height of the structure is 75 feet; the marble figure of Columbus being 14 feet high, while the marble figure of the Genius of Geography measures 10 feet. The shaft is of Baveno granite, while the bas-relief panels, the rostral beaks and other ornamentation are of bronze.

A SHOP-FRONT IN EAST 17TH ST., NEW YORK, N. Y. MR. VAN CAMPEN TAYLOR, ARCHITECT, NEW YORK, N. Y. [Gelatine Print.]

ARNCLIFFE, HEADINGLEY, ENG. MR. FRANCIS W. BEDFORD, ARCHITECT.

HALL, ARNCLIFFE, HEADINGLEY, ENG. MR. FRANCIS W. BED-FORD, ARCHITECT.

On August 25 we published a view and description of this house. The name has, however, been changed from Shireoak to Arncliffe.

ENTRANCE, MARYLAND HOUSE, HEADINGLEY, ENG. MR. FRANCIS W. BEDFORD, ARCHITECT.

BILLIARD-ROOM CHIMNEYPIECE, MARYLAND HOUSE, HEADING-LEY, ENG. MR. FRANCIS W. BEDFORD, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

SPREAD EAGLEISM IN ART.

MARDI GRAS, Fin de Siècle.

TO THE EDITORS OF THE AMERICAN ARCHITECT: -

Dear Sirs, — I take pleasure in calling your attention to the inclosed clippings from daily newspapers as indications of the wonderful progress of the arts in this country.

"Architect— has drawn plans for a very handsome residence costing \$25,000 for—, at the northwest corner of—and—Street. It will be of brownstone, red brick, slate and terra-cotta, with a minaret on the corner entirely of copper. The house will occupy a space fifty by seventy-eight feet. It is of the style of architecture known as pure Romanesque. . . . The music room is finished in Louis IV style with white and gold, and has a recess for a pipeorgan and raised platform for two grand pianos. Back of the main entrance hall is a large dining-room, finished in old German style, with a raised platform at one side for the table.

"Mr. — has planned several smaller houses to be built at — .

One for — will be built at a cost of \$6,000. It will be frame and of the Colonial type. One will cost \$4,000. It will be an imitation of a Swiss cottage. Another Colonial house will be that of — , which will cost \$5,000. — will build a \$3,500 house, which will be of the Queen Anne pattern. — has also designed a \$4,500 residence for — on — Place, near — . It will be of stucco work, of the early English style."

"Mr Chadwick has published a symphony in the event stale of

"Mr. Chadwick has published a symphony in the exact style of Beethoven, a pure Rossini opera, a noble Mass like Palestina, and a volume of songs in the pure Grieg style."

"Mr. Sargent has completed a portrait of Mr. Vanderbilt that the

most intelligent connoisseur could not distinguish from a Holbein. His new portrait of Mrs. Astor will be an exact Titian. Senator Hill has commissioned the famous artist to portray him in the pure

Rembrandt style. It is to be hoped that the painter will do a pure Hals and a pure Velasquez before he returns to Europe. It is said that he is tired of the European styles, and intends to introduce the

Pompeian and, later, the Chinese styles of portrait-painting."

"Mr. Alexander Harrison hangs in this year's Academy a fine Corot, a perfect Venetian Canaletto and two pure Turneresque sunset seas."

"Professor Sedgwick publishes this month an exhaustive treatise on Biology in the manner of Hippocrates. The Greek is said to be absolutely pure and no single anachronism has been found in the thought. It will be a most valuable contribution to the shelves of libraries."

"Mr. William Morris has written a poem in eighty-three cantos "Mr. William Morris has written a poem in eighty-three cantos in the exact style of the Finnish literature of the tenth century, but a man at Athens, N. Y., has surpassed that by composing an epic in pure Indian. He has chosen an extinct Iriquois dialect, known to only three scholars, to embody his theme. The poem contains over one hundred thousand lines, and is so pure in spirit that a translation is impossible. The fighting in it is said, by the author, to surpass anything Mr. Andrew Lang has ever conceived of. This country is to be convertibled upon this lifelong reach are the country is to be convertibled upon this lifelong reach are the convertible. try is to be congratulated upon this life-long work, an enduring monument to the sense and taste of the author."

This cutting from the Red Rag puzzles me. "We must not forget that the architects of the country are heart and soul for one "We must not cause, and are taking great pains to disseminate a wide-spread desire for the free use of dynamite at the great upheaval." Of course, I could understand it if I believed that they desired to injure their fellows in order to benefit themselves, but the profession has never been of that stripe. Yours respectfully, Social Observer.

A QUESTION OF COMMISSION.

BOSTON, MASS., November 21, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs. — I should be pleased to have your opinion, or that of any of your professional readers, in regard to what would be considered a fair rate of compensation, for professional services as architect in the below stated case:

An architect was employed to prepare plans for a college building. After obtaining the views of the Faculty and a knowledge of the uses of the new building, preliminary plans and designs were made and submitted for the consideration of the Faculty. A more ornate building was desired than these designs showed, and new designs were made, embodying a tower and other elaborations, and again submitted, and approved; and the contract-drawings and specifications ordered to be prepared, and estimates obtained. These orders were complied with, but the estimates submitted were found to be in excess of the amount the Faculty desired to spend, and new designs and specifications were prepared to meet their views in this respect, estimates obtained, and the contract awarded. The buildings were constructed under the architects' supervision until the plastering was about finished, and the erection of the standing finish commenced, when it was burned down.

commenced, when it was burned down.

Considerable labor was entailed on the architect in adjusting claims between the builders, underwriters and Faculty, and new sketches were made showing a slightly different treatment of elevation from that of the original building; the terms of a new building-contract arranged, and the buildings finally completed under the supervision of the architect.

Yours truly,

Puzzled.

arranged, and the buildings finally completed under the supervision of the architect.

Yours truly,

PUZZLED.

[PERMAPS the simplest answer to this is to say that the fair compensation for the services described is what the architect, at the time he did the work, thought that his client expected to pay him. If the architect, when his original design was abandoned, and a more elaborate one substituted, told his clients that he should make an extra charge for the additional work, and they ordered him, or suffered him, to go on with it, he is entitled to such extra pay as he gave them to understand he would require; and the same is the case with regard to the third set; but if he simply went on and made three sets, without mentioning to them that he would make any extra charge, and without the occurrence of any circumstances indicating that they expected to be called upon to pay for more than one set, he will find it difficult to collect payment for the extra work. However, men do not, as a rule, stand strictly upon their legal rights, and, if "Puzzled" has a time-book, from which he can show that he spent so many hours on work made necessary, not by any defect of forethought or knowledge on his part, but by the contradictory instructions of his clients, it is likely that the latter will allow him a reasonable sum for the time so spent for their benefit. The same rule applies to the services included in adjusting accounts with the Underwriters after the fire, and in making new drawings, and going over the work again, except that there is a much stronger presumption in the latter case that the clients must have known, or supposed, that they would have to pay the architect an extra sum for his additional services. In fact, the presumption in the latter case is too strong to be set aside by anything except some sort of waiver by the architect; and, in default of this, it is probable that a jury would award a reasonable extra payment. What would be reasonable would depend upon the circumstances. In such cases, the tim ARCHITECT.

A QUESTION OF ETHICS.

November 24, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, - Some time ago I executed plans and specifications for a structure and superintended the erection of same. When completed, an architect from out of town visited it and without the consent or knowledge of the owners or architect presumed to take measurements, et cetera, necessary for the erection of a similar structure, a most despicable undertaking. Kindly inform me if I have any redress, and if so, the means to arrive at such.

Respectfully yours, J. A. O'B.

[WR do not believe that you have any redress. In theory, the law permitted you to copyright your design, and, as you did not care to avail yourself of this protection, it is presumed that you were willing to have all the world make use of it. Perhaps the owners of the structure could get damages for the injury done them by imitating their property, but a jury would have to be convinced that there was a real damage to them, measurable in dollars and cents. — Eds. American Architect.]



Boston, Mass. — Exhibition of Millet's "Sower" and other Paintings loaned by Quincy A. Shaw, also, the Works of Adolf Menzel, and Drawings by John Trumbull: at the Museum of Fine Arts.

Drawings by Charles Dana Gibson: at Doll & Richards, 2 Park St. Pictures by Joseph Lindon Smith: at the St. Botolph Club, November 26 to December 12.

Water-colors by Sears Gallagher: at Foster Bros., 164 Boylston Street, closes December 1.

Exhibition of Pictures of New England Life by New England Painters: at Jordan, Marsh & Co.'s, opens November 27.

Dielman's "Marriage of Dr. Le Baron," and Water colors by William

Adam: at Williams & Everett's, 190 Boylston St., opened November

Water-colors by George H. Clements: at J. Eastman Chase's, 7 Hamilton Place, November 21 to December 4.

Hamilton Place, November 21 to December 4.

Chicago, Ill. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.

Water-color Exhibition: at F. Keppel & Co.'s, 1 Van Buren Street.

New York, N. Y. — Loan Exhibition of Portraits of Women: at the National Academy of Design, November 1 to December 1.

Fall Exhibition of the National Academy of Design: opens December 10 closes January 5.

closes January 5.

Loan Exhibition: at the Metropolitan Museum of Art, New North

Wing opened November 5.

Fifth Annual Exhibition of the New York Water-color Club: at the Galleries of the American Fine Arts Society, 215 West 57th Street,

December 1 to 22.

Zschille Collection of Arms and Armor: at Tiffany & Co.'s, Union

Square.

Exhibition of Historical Book-bindings: at the Grolier Club, Decem-

Drawings by "Life" Artists: at "Life" Building, 19 West 31st Street, closes December 1.

Illustrations of Shakespeare, by Edwin A. Abbey: at F. Keppel & Co.'s, 20 East 16th Street, closes December 7.

Co.'s, 20 East 10th Street, closes December 1.

Pictures by Adolph Artz: at William Macbeth's, 237 Fifth Ave., opens December 1.

"Little Girl Pictures" by Miss Maria Brooks, and Water-colors by Dutch Artists: at H. Wunderlich & Co.'s, 868 Broadway, opened November 24.

Third Annual Exhibition of the Sketch-Club of New York: at 1473 Broadway, December 5 to 8.

PHILADELPHIA, PA. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 16.
Sixty-fourth Annual Exhibition of the Pennsylvania Academy of Fine Arts: opens December 17, closes February 23.

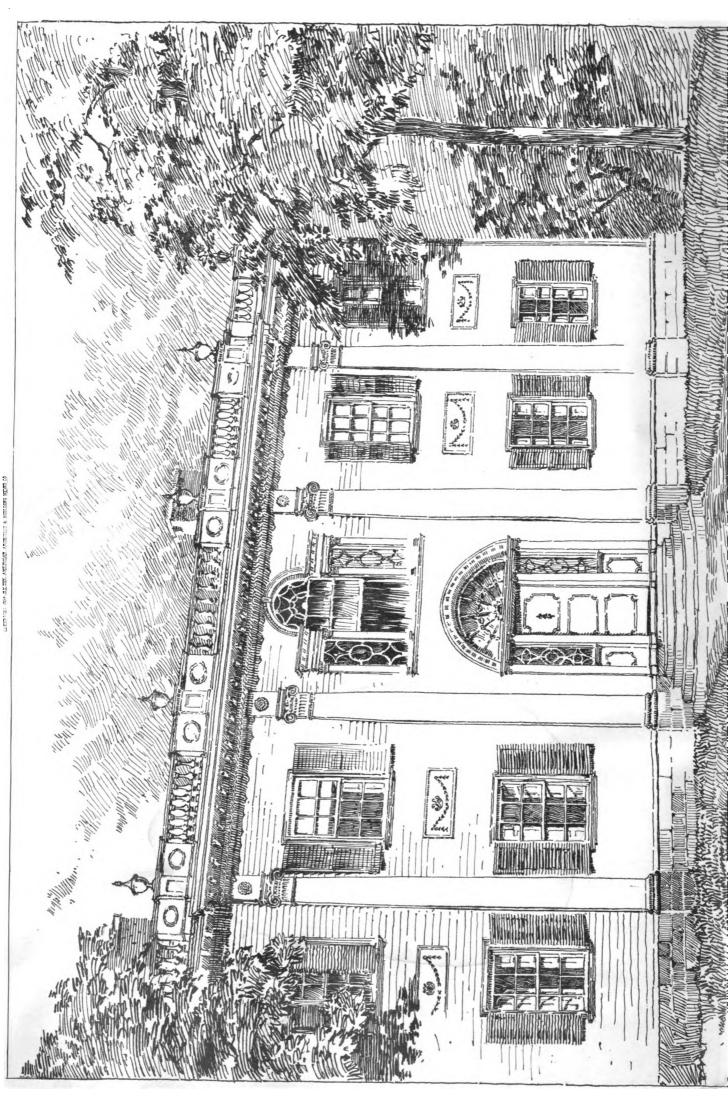


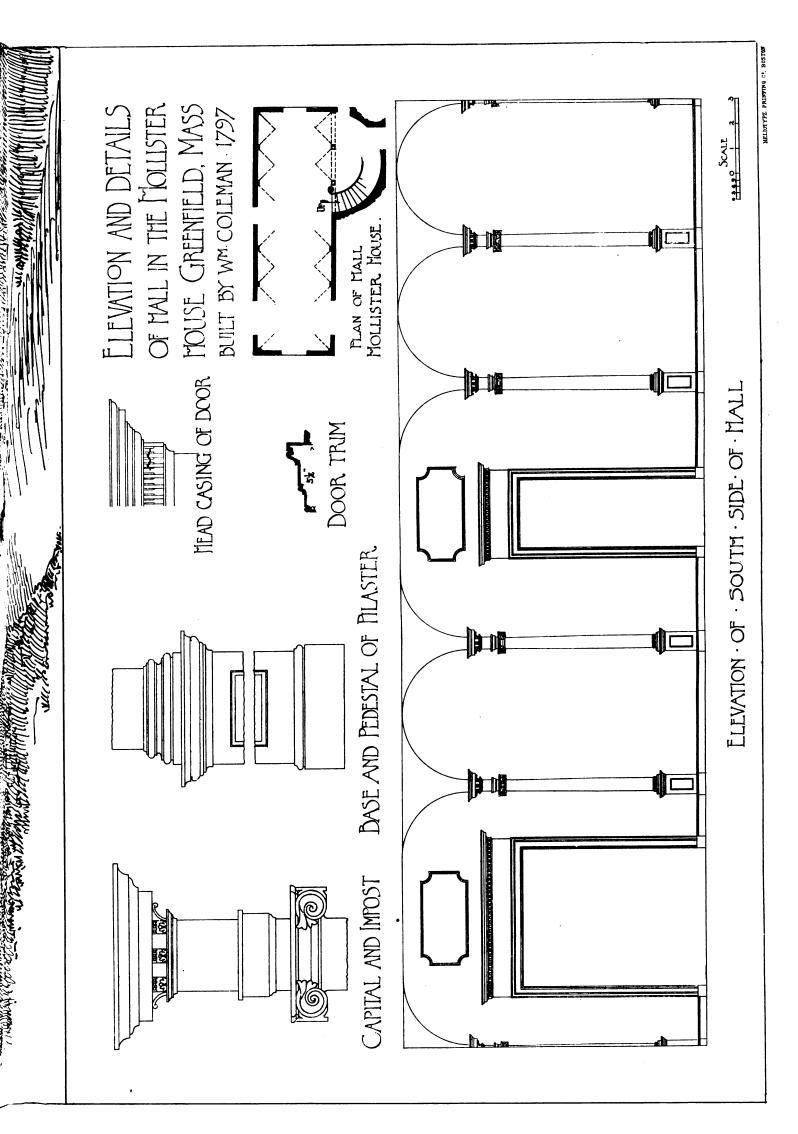
LONDON WATER SUPPLY.—In his interesting address as President of the Engineering and Architectural Section of the Sanitary Congress at Liverpool, Mr. G. F. Deacon took occasion to differ from the recent report of the Royal Commission on London Water-supply, and to maintain the opinion that such waters as those of Loch Katrine, Lake Vrynwy, or Lake Thirlmere were alone fitted for the supply of a great town. Mr. Deacon lays great stress on the fact that filters may fail and apparently imagines that for efficient filtration, there must be an unbroken film of gelatinous matter over the whole surface of the filtrebed. The experiments of the Massachusetts State Board of Health prove that no such "unbroken" film is required. In one case their filter consisted of a bed of pebbles the size of robin's eggs, five feet thick, and when sewage was passed through this stratum at the rate of 30,000 gallons per acre per day, 98 6 per cent of the organic matter present in the sewage was destroyed, together with 996 per cent of the bacteria. Even when the rate of filtration was increased to 100,000 gallons per acre per day, nearly equal results were obtained. Now river water is comparatively pure to start with, and a decrease of 19.6 per cent of the pathogenic germs in it would suffece to render it innocuous, as a considerable dose of these organisms is required to produce disease. Indeed, there is at least a possibility that a minute dose might be beneficial as a kind of vaccine. Apart from this, however, the filter-beds actually used are, in their upper layers, of a much tiner texture than the pebble bed used in the experiment referred to, and hence there is every reason to believe that the uncertainties of filtration on which Mr. Deacon laid so much stress, have no existence in towns in which filtration is performed in a rational manner. This is fully confirmed by experience. The town of Altona, situated on the Elbe below Hamburg, and drawing its drinking water from the same river lower down than Hamburg, enjoyed an almost comp

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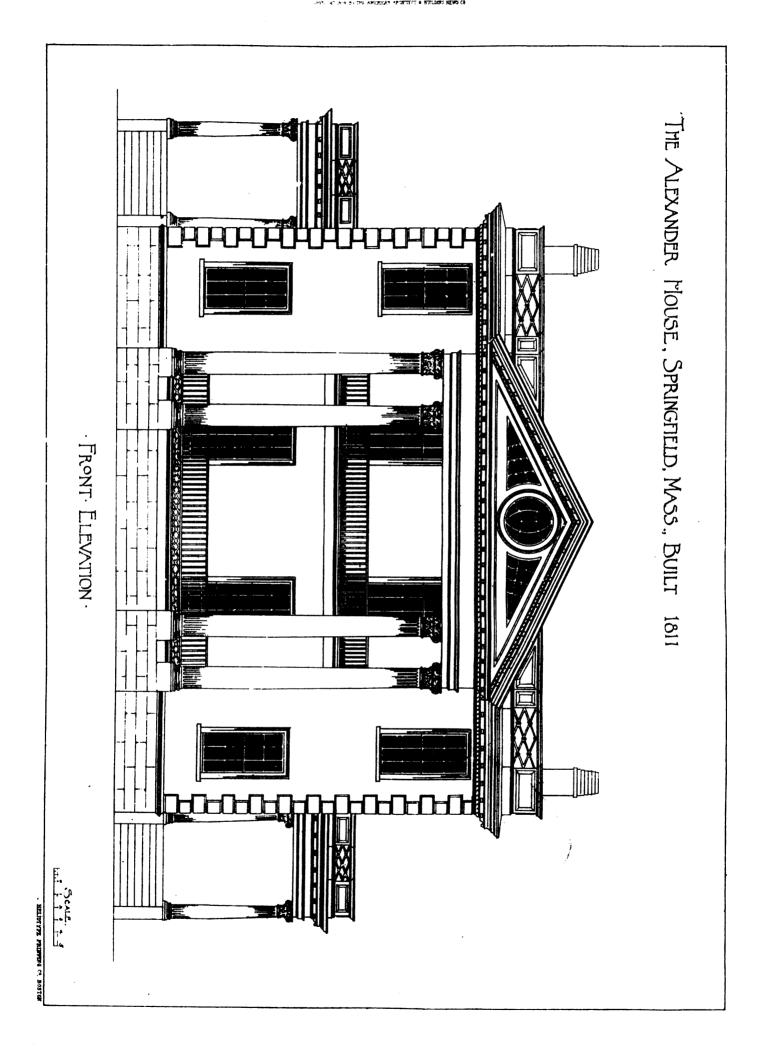


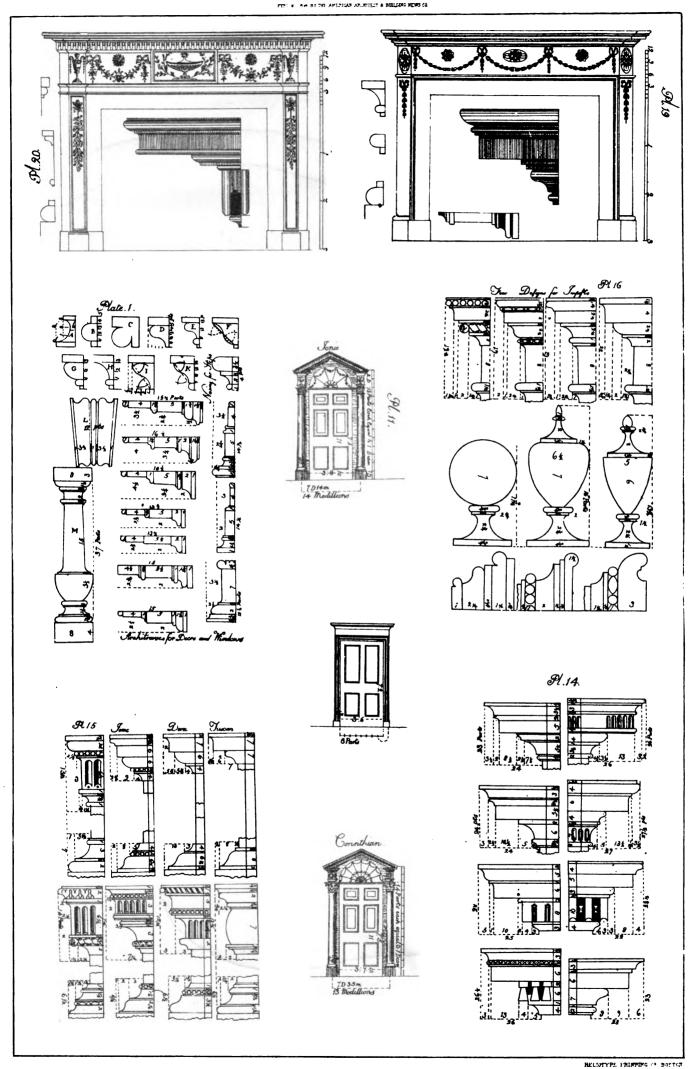
MERICAN ARCHITECT AND BUILDING REWS, DEG. 1. 1594.

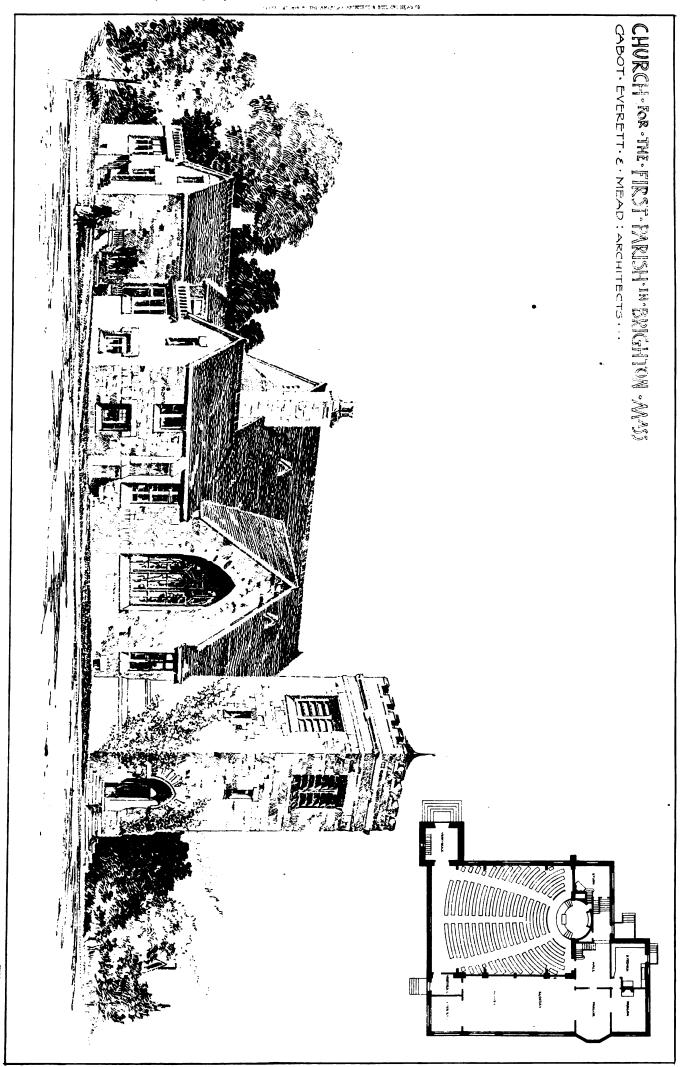




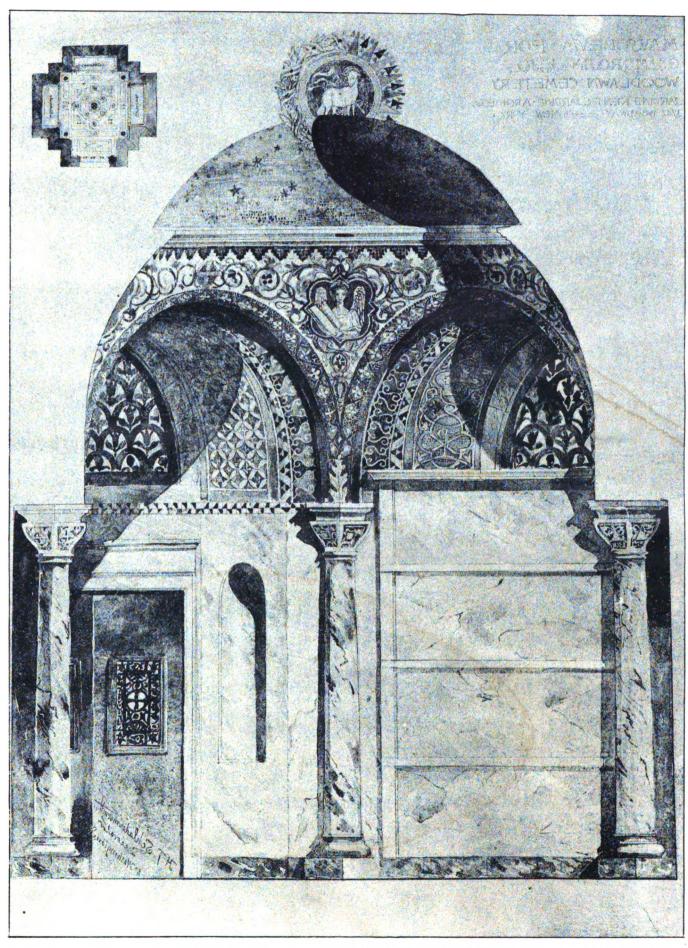
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MAUSOLEUM FOR G. P. MOROSIN, ESQ., WOODLAWN CEMETERY.

JARDINE, KENT & JARDINE, Architects, 1262 Broadway, New York.

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DECEMBER 8, 1894.



SUMMARY: -

TE have not yet exhausted the interesting matter to be found in the Report of the United States Strike Commission on the Chicago strike of 1894. It will be remembered that, in our previous comments on the Report, we suggested that it seemed to go out of its way to make accusations, or rather, insinuations, against the Pullman Company which its own statistics did not bear out. This impression is not removed by a more careful reading of the Report. On page 31, in speaking of the wages paid by the Company, it remarks that "During all of this reduction and its attendant suffering none of the salaries of the officers, managers or superintendents were reduced. Reductions in these would not have been so severely felt, would have shown good faith, would have relieved the harshness of the situation, and would have evinced genuine sympathy with labor in the disasters of the What place sentimental platitudes of this sort have in the report of a Commission appointed to ascertain facts, we cannot see, but its evident purpose is to excite feeling against the Pullman Company, and the next paragraph contains a misrepresentation, in the same direction, so gross, not to say malicious, that we cannot help feeling that a public retraction and apology ought to be made for it. This paragraph says: "In its statements to the public, which are in evidence, the Company represents that its object in all it did was to continue operations for the benefit of its workmen, and of trades-people in and about Pullman, and to save the public from the annoyance of interrupted travel. The Commission thinks that the evidence shows that it sought to keep running mainly for its own benefit as a manufacturer, that its plant might not rust, that its competitors might not invade its territory, that it might keep its cars in repair, that it might be ready for resumption when business revived with a live plant and competent help, and that its revenue from its tenements might continue." What "evidence" the Commission found to support so extraordinary a conclusion we cannot say, as none of it is given in the Report. On the contrary, while the greater part of the sentence consists of pure assertion, of the sort that labor orators produce so copiously, the last statement, that the Company kept its shops open, "that its revenue from its tenements might continue" is flatly contradicted by a few words on page 33, to which we have before referred, in which it is stated that "At the time of the strike about \$70,000 of unpaid rents had accumulated. It is fair to say that this accumulation of unpaid rent was due to leniency on the part of the Company

toward those who could not pay the rent and support their families. Neither have any actual evictions taken place.' is curious to compare this paragraph with the elaborate arguments on page 29, in which, after showing that from September 18, 1893, to May 1, 1894, the Company took and carried out contracts to the amount of \$1,421,205.75 "which was \$52,069.03, or 3.663 per cent, below shop-cost for labor and materials," the Commissioners say that "Against this, the loss to labor by the reduction of wages paid on this work was over \$60,000. . . . Hence, while the amount of loss was nearly equally divided, it seems that the percentage of loss borne by Labor in the reduction of wages was much greater than that sustained by the Company upon material. Three-quarters of the loss for the Company, and the balance for labor, would have more fairly equalized the division of loss on these contracts." It will be observed that the Commission gives the Pullman Company no credit for interest on its capital, depreciation, repairs, supervision and many other things, but assumes that it furnished nothing but the bare material, and claims that, because the cost of material, in car building, is about three times as great as the cost of labor, the stockholders in the Company, besides going without their dividends, and paying the interest on their borrowed money out of their own pockets, ought to keep their works running by taking contracts at less than the cost of labor and materials, and shouldering threequarters of this additional loss themselves, rather than incur the enmity of Labor by asking their men to work a little harder or for a little less wages, as the alternative to going without any employment at all. One cannot help thinking that if the labor-cost in the finished product had been threequarters, and the cost of material one-quarter, the Commission would have found some equally ingenious reason for still saddling the three-quarters of the loss on the Company, and the rest on Labor; but the point of the whole argument is destroyed by the simple fact that, while the Company nominally reduced wages to the amount of sixty thousand dollars during the term referred to, it voluntarily remitted rents, for it can never hope to collect arrears, to the amount of seventy thousand dollars during the same time; so that Labor, instead of bearing half the loss on the unprofitable contracts, as the Commission represents, not only bore nothing, but profited by the losing contracts to the amount of ten thousand dollars, the Company thus virtually assuming all the losses of every kind due to the bad business of the year, keeping its men employed at their old wages, and paying them a bonus of ten thousand dollars besides. It may be objected that the benefits of remission of rents were confined to the poorer and more burdened men, and that the bachelors, with no one dependent upon them, had to work for less pay than before; but if the Commission's theory, that reductions in wages ought to be made where they will be least severely felt, is correct, it could not be better applied than in the way in which the Company applied it; and the evidence appears to us to show, not that the Pullman Company kept its works running "mainly for its own benefit as a manufacturer," or "that the revenue from its tenements might continue"; but mainly for the benefit of its men and their families; that its reduction of wages, with more than corresponding remission of rents to men with families, was the plan, and the only one which seems to have been feasible, by which it imposed a light burden upon those of its men who could easily bear it, without requiring any sacrifice whatever from those who could not well make it; and that, so far from robbing its men of their wages in order "that its revenue from its tenements might continue," it used its control over "the revenue from its tenements" to exercise a great and discriminating kindness in favor of the people who needed it most. These conclusions are not shaken by the mass of stock assertions concerning "monopolies," "concentrated wealth," and so on, which fill the latter pages of the Report; and we would like to ask how many private manufacturers, during the last two years of reduced wages, have paid the house-rent of their poorer men; have kept them busy on work contracted for at a loss; have allowed them to occupy their houses, without demanding rent, while they were engaged in a long and causeless strike; and have taken them back, on the same terms, as soon as they came to their senses. All these things the managers of the Pullman Company, the "great monopoly," the representative of "accumulated capital," the embodiment of "strict business," the "very wealthy and unyielding corporation," have done, as is plainly shown in the pages of the
Report, and it seems to us that the best beginning that
the Commissioners could have made in the work, which they
deem so urgent, of "conciliation" between Labor and Capital,
would have been to give the Pullman Company credit for what
it has done, and point out how fairly and generously at least
one great corporation is managed, instead of wresting facts to
increase the popular prejudice against it, and obscuring what
little information they give by a mass of à priori speculations
and assertions.

R. FREDERICK LAW OLMSTED has furnished recently an example of professional honor which should be noted by all architects and engineers. It will be remembered that he was appointed, a few weeks ago, by the New York Park Commissioners, as landscape architect of the Harlem Speedway. His appointment was made when he was in North Carolina, and it was not until his return that he met the Commissioners to consider the details of the engagement. When he discovered that the Board had determined not to avail themselves of the services of Mr. Calvert Vaux, who has been the regular landscape architect to the Park Department for something like thirty years, he positively refused to accept the appointment. He might, he said, be willing to act in conjunction with Mr. Vaux, but under no circumstances would be consent to supersede him, or to undertake the work without him. The Commissioners reminded him that the statutes providing for the construction of the Speedway provided also for the appointment of a special landscape architect, but Mr. Olmsted remained obdurate, saying that Mr. Vaux was the best-qualified man in the world for that sort of work, and that he would have nothing to do with the affair unless in association with him. Finally, the interview terminated, with the understanding that the Board should put its proposition to him in writing, and that he should then consider it, and reply in the same way.

BESIDES its importance as a conspicuous example of professional loyalty and honor, this episode ought to have a special value as a lesson to Commissioners, and others in authority, that the members of the great professions will sustain each other against arbitrary caprice. Although the present Board of Park Commissioners may be composed, as has almost always been the case, of able, honorable and devoted men, there seems to be no question that the dislike which a majority of the Board seems to have conceived for Mr. Vaux is trivial and personal. One complaint which has been made against him is that he "antagonized the Board," while the only other one, so far as we have seen, is that he "makes mistakes." It does not require any great familiarity with the relations of professional advisers and their clients to see that both these objections are the mere expression of personal pique. Mr. Vaux is a man of very great experience and skill. It is not likely that his opinion would always coincide, in matters relating to his art, with those of three or four merchants and lawyers, however intelligent the latter might be; but it is still less likely that he would oppose the opinions or wishes of the Park Administration without good reason; and to attribute publicly his firmness in maintaining his own convictions against those of people without a thousandth part of his knowledge, or sense of professional responsibility, to a mere desire to "antagonize" the members of the Board, is as little calculated to convince the public of the incorrectness of Mr. Vaux's opinions as the plan of being revenged upon him by superseding him, after thirty years of service, is to attest to the public mind the fairness and courtesy of the Board toward its advisers. The plea that Mr. Vaux "makes mistakes" is still less creditable to the Board. Every professional man makes mistakes all through his professional life. He is constantly required to weigh circumstances, by the light of such evidence as he can get, and make his decisions in accordance with what seems to him the preponderance of advantages; and it is inevitable that the subsequent development of events should sometimes show that a different decision would have been better. Doctors and lawyers are not employed by sensible people to give infallible advice, but to use their best judgment, and it would be hard for the Park Commissioners to show that a landscape architect should be expected to do more.

THE Woman's Building for the Cotton States Exposition, to be held at Atlanta in 1895, is to be designed by two young ladies, Misses Mary N. Gannon and Alice J. Hands, now students in the New York School of Applied Science for Women, whose sketch-plans were chosen in competition. The building is to be shingled on the outside, with Ionic columns and other "trimmings," painted white, and is to contain various exhibition-rooms, and an art-gallery. The interior is to be finished in Southern pine.

THE architects and artists of Berlin are having a very pretty, though decorous, quarrel with the German Emperor. It will be remembered that the latter's action in arbitrarily selecting Professor Raschdorff as the architect of the great Berlin Cathedral did not particularly please the profession, and his Majesty's later excursions, or incursions, into the field of art do not appear to be any more satisfactory.

The recent completion of the Imperial Parliament-House has given occasion for the elevation of Paul Wallot, the architect, to the highest professional honors, by the common consent of German architects, who are practically unanimous in their admiration of the skill and talent with which the great com-mission has been carried out. Meanwhile, however, the Emperor has taken a dislike to the building, or to the architect, or both, and does not hesitate to express his imperial sentiments on the subject. A little while ago, on the occasion of the award of the medals at the annual Berlin Salon, the Prussian Royal Academy, which acts as a jury, voted a first gold medal to Herr Wallot, who is now also Doctor and Professor, besides holding other titles. Under the rules of the Academy, the list of awards must be submitted to the Emperor for approval. This was done as usual, and the list came back with Dr. Wallot's name scratched out, and that of Frau Parlaghi, an artist popular at Court, whose contributions had been refused by the hanging-committee, and only admitted in obedience to the Emperor's command, substituted for it. Probably the jury had to submit, but, a little later, the Emperor communicated to them another mandate, to the effect that they should at once set aside one of the rooms in the Academy building, for a special exhibition of Frau Parlaghi's pictures. This was more than they could endure, and they refused to obey; and the Emperor was obliged to have the walls of the National Gallery, over which he has more control, cleared to make room for the lady's works.

CURIOUS accident took place in a Swiss electric-lighting establishment not long ago. The dynamo machines in this particular station are driven by turbine-wheels, of which there are four. The main driving-wheels, which are attached directly to the turbines, are large open pulleys, with six spokes, made in two pieces, bolted together. The ordinary speed of these pulleys is about two hundred revolutions per minute. A few days before the accident, to make some test of the turbines, the belts were thrown off, and the turbines and attached pulleys allowed to revolve as they would. In general, as Professor Escher, of Zurich, who writes the account to the Schweizerische Bauzeitung, says, the speed of a turbine without a load is about double what it is with a load suited to its capacity; and, by actual count, the large pulleys revolved, at the maximum, four hundred and twenty-five times a minute. Some days later, while no one was in the room, all four of the wheels burst, nearly at the same moment, sending fragments through the floor and ceiling. Professor Escher, thinking that an explanation of this curious accident may be of value, shows that, as the centrifugal force increases with the square of the velocity, the throwing-off of the belts brought an outward bending strain on the rim of the wheels nearly five times as great as that to which they were normally exposed, and, as he proves, dangerously near the point of rupture of cast-iron; and the fact that all the fractures took place near the spokes proves that they were caused by the outward bending of the unsup-Curiously enough, the ported space between the spokes. accuracy of these observations was attested later. A spare pulley was mounted, in place of one of those destroyed, and was set at work to drive a portion of the electric-light machinery. For some reason, the load for a short time was thrown off this turbine, and then restored. The next morning, the pulley was found cracked in two places, just where the others had given way; and, if its use had been continued, there is no doubt that the cracks would have spread until the wheel came to pieces like its predecessors.

A NEW BUILDING BILL FOR LONDON.

DETAIL OF GABLE ONTHE NEW YORK LIFE BUILDING. ST. PAUL MINN BABB, COOR O' WILLARD. 1222 ********

JICHE buildings of London and the formation of her streets have, up to the present, been governed by a series of acts, amendments and by-laws, too confusing for mortal to untangle. The multiplicity of measures passed since the Building Act of 1844 by way of amending, altering and adding to the original act, has made it a matter of necessity that a consolidating act should be obtained, and that all the laws relating to buildings should be between the two covers of one document. Thirteen old enactments have, therefore, been revised, so as to bring them into one.

The London County Council as the administrators of the Building

The London County Council, as the administrators of the Building Acts, framed a bill dealing with this consolidation, comprising the improvement in width of streets, open spaces at back and front of buildings, height of buildings and materials of which they were to be built. The clauses dealing with the open spaces met with great opposition on the part of land-owners, and other clauses where trade interests were concerned were also strenuously objected to. The bill was referred to a select committee of the House of Commons which held sittings two and three times a week for many months, with the result that the Act, as passed, is a very modified form of the proposals of the London County Council. Modified as it is, it shows many steps of advancement and will prevent many abuses now legally allowed.

The London Streets and Building Act, 1894, will come into force on the first day of the new year. Let us see briefly what its provi-

sions are:

The Act consists of fourteen parts, dealing with widening of streets, The Act consists of fourteen parts, dealing with widening of streets, lines of building frontages, naming and numbering of streets, open spaces about buildings, height of buildings and their construction, temporary buildings, rights of adjoining owners, dangerous and neglected structures, dangerous and noxious businesses, sky signs, appointment of superintending architect and district surveyors, etc.

We purpose in this article chiefly to confine our remarks to the portions of the Act dealing with buildings in relation to streets, open areas and constructions

areas and constructions.

Generally it may be stated, the administration of this Act is in the hands of the London County Council, its superintending architect and district surveyors, with certain exceptions, and here the ancientary of London is exempt from such jurisdiction in the manner referred to in a recent article which appeared in these pages on the subject of "Unification of the City of London" and the London County Council. One of the new features of the present Act is the appointment of a Court of Appeal to hear any complainant against the decisions given by the Council and its officers. This Tribunal of Appeal is to consist of three members appointed by the Secretary of State, the Royal Institute of British Architects and the Surveyors' Institute. The members are to be appointed for five years and to be paid by the Council, but no member of the Council may be a member of the Tribunal.

The Act gives the Council power to appear before this Tribunal with expert witnesses and by learned counsel; the appellants are to be charged fees to be heard, when they have any grievance against the Council's ruling. The Tribunal have power to hear witnesses on oath and their decision in all matters is final.

Before any one can begin to form a new street, either for foot or carriage traffic, he must apply for permission to the Council. minimum width of a street for vehicular traffic is forty feet; for foot passengers, twenty feet. All new streets must lead from one street to another and not be culs-de-sac. No steeper gradient is allowed to another and not be culs-de-sac. No steeper gradient is allowed than one in twenty. A street of sixty feet in length, or any street not exceeding sixty feet in length, of which the length is greater than the width, must be open at both ends; the maximum width which the Council can compell a street to be made is sixty feet.

No building or forecourt hall may in any case be erected at a less distance than half the width of the roadway measured from the

centre of the road. There are, however, some exceptions as to the reërection of old buildings.

No building or structure can be erected beyond the line of building-frontage determined by the superintending architect, and buildings now projecting beyond the general line, when taken down, are to be set back. As difficulties may occur in determining in what street a building is situated when erected upon a corner plot, the Act provides that the superintending architect is the proper authority to settle this point.

In order to provide breathing-space, light and ventilation in the rear of buildings, an open space of not less than one hundred and fifty square feet exclusively belonging to such buildings must be left at the back, extending the full width of the building. In dwellings for the working classes, this open space must be entirely free from any erection, with the exception of water-closets or ash-pits, not exceeding nine feet in height. In other cases, the space may be built over to the height of the level of the ceiling of the ground-floor rooms, or a maximum height of sixteen feet above the pavement.

In order to limit the height of buildings in respect to the space in the rear, an imaginary line is to be drawn at an angle of sixty-three and one-half degrees from a point in the back fence of the open space in the rear of each building, starting at the pavement level; no part of a building except chimneys, dormers, gables, etc., can be carried above the limit defined by this line drawn sixty-three and one-half degrees; with respect to domestic buildings where the open space is allowed to be built over, as above described, to a height of sixteen feet, the angle of sixty-three and one-half degrees may be started sixteen feet above the pavement.

The limitation of the height of the front of a building is determined

by the width of the street, the height being equal to such width. For be twenty feet in height, and those on a forty-foot roadway, forty feet in height. Where, however, the roadway is more than fifty feet in width, a greater height is permitted up to a maximum of eighty feet.

It will be seen from these clauses that the speculative builders will

no longer be able to purchase two-story cottages in narrow passages no longer be able to purchase two-story cottages in narrow passages and alleys, pull them down and erect upon the ground tenements, flats, or artisans' dwellings of four or five stories in height. The immense benefit, therefore, obtained in acquiring sufficient space, both before and behind dwellings for light and ventilation, will easily be understood; such spaces must afford means of improvement to the public health and eventually destroy, as London is gradually rebuilt, the slums and fever dens with which it now abounds.

In order to provide light and air in large blocks of buildings where there is a court within even to the sire that the part into which the

there is a court within open to the air at the top, and into which the windows of the rooms open, or where such court from the eaves on the top of the parapet to the ceiling of the ground story exceeds the measurement of its length or its breadth, then adequate provision must be made for ventilating such court by means of communication to the outer air at the ground level.

No habitable room not having a window directly opening into the external air, otherwise than into a court enclosed on every side, is allowed, unless the court measures from the window to the opposite

side a distance equal to half its height. We will not enter now into the schedule of the thickness of walls; suffice to say they exceed the thicknesses allowed by the old Acts. Windows and door-frames are allowed now to be placed flush with

external walls, whereas formerly they had to be set back four and one half inches; other woodwork has to be set back, but oak and teak

are exempt from this provision.

A great effort was made by some parties opposing this Bill to re-beal the provisions for carrying a party-wall up through the roof of buildings. This effort failed. In the warehouse class the wall must buildings. This effort failed. In the warehouse class the wall must go three feet through the roof, in other buildings fifteen inches. Every building exceeding thirty feet in height, used as a dwelling-house, must be provided with an escape onto the roof in case of fire with a trap-door and hinged step-ladder.

The pitch of a roof for the warehouse-class is limited to an angle

The pitch of a roof for the warehouse-class is limited to an angle of forty-seven degrees; for other buildings seventy-five degrees, and not more than two stories are permitted within the roof of a domesnot more than two stories are perimeted within the roof of a domestic building. Any story constructed in the roof of a domestic building sixty feet or more above the street must be built of fire-resisting materials. Every new building exceeding sixty feet in height must be provided on floors above that height with "reasonable" means of escape in case of fire, and such stories may not be occupied until they are certified as safe.

The rules included in the Act as to chimneys, flues, furnaces, close

fires, etc., need not be dwelt on here.

A clause is inserted for the provision of fireproof staircases in public buildings and buildings adapted for separate families of more than one hundred and twenty-five thousand cubic feet; the lobbies, corridors, passages and landings are also required to be of fireproof construction. Where a building is constructed to be used in separate tenements by more than two families, the common staircase must be ventilated in every story by means of windows. With regard to rooms, the minimum height from floor to ceiling is specified at eight feet six inches, except rooms situated in the roof which must be, at least, eight feet in height from the floor to the ceiling throughout not less than one-half the area of each room. Every habitable room must have one or more windows opening into the open air of an area of at least one-tenth of the floor-space.

In basement rooms, ventilating-space must be left under the floor,



and rooms situated over stables must have a floor pugged three inches in thickness and plastered below to prevent gases penetrating into the living-rooms. The approach to rooms over stables must be by

a staircase or gallery separated from the stable by brick walls.

The limit of the cubical contents of a building of the warehouse-class is 250,000 cubic feet, unless divided by party-walls. Where, however, the Council are satisfied by the report of their architect or the chief officers of the fire-brigade that additional space is necessary for any trade or manufacture, and that proper arrangements are made lessening the danger from fire, they may consent to a maximum cubical content of 450,000 feet, provided the building does not exceed sixty feet in height and is not used for the manufacture of ex-

plosives or inflammable materials.

The Act deals with certain public buildings and the exits there-from in case of fire, which were not included in former enactments. Churches, chapels, public halls, and meeting-rooms, etc., must in future have fireproof staircases supported and enclosed by brick walls of a minimum width of four feet six inches for four hundred persons, six inches being added for every additional one hundred persons, until a maximum width of nine feet is obtained. Where, however, the church, chapel, etc., is so small as to contain only two hundred persons, a width of three feet six inches will be allowed; nundred persons, a width of three feet six inches will be allowed; the same rules apply to the width of passages, corridors, and external doors. Where a portion of the public is seated at a higher level than others, separate means of exit must be provided leading directly into the street. The rules as to theatres remain as at present. These have been given in former numbers of the American Architect. Architect.

It is extremely satisfactory to find that an evil which has so long existed in the inadequate means of egress from churches, chapels, etc., is to be done away with in London; it is seldom, if ever, one finds a church door which opens outwards — a simple, but most

important provision for safety.

It would be impossible, even if it were desirable, in the space at our disposal to touch upon all the important points in this new Building Act of London, consisting, as it does, of two hundred and eighteen clauses, besides several pages of schedules; suffice it, therefore, in conclusion to mention that Part VII deals with temporary buildings and wooden structures, Part VIII with the rights of building and adjoining owners, Part IX with dangerous and neglected structures, Part X with dangerous and noxious businesses, Part XI with the prohibition of the construction of the prohibition of the construction of the prohibition of the construction of the construction of the prohibition of the construction of the const with the prohibition of the construction of dwelling-houses upon low-lying land which cannot be drained by gravitation, and Part XII with sky signs.

The remaining portions of the Act deal with the statutory appointment and duties of the superintending architect of the Council and the district surveyors, the power of the Council to make by laws, and sundry clauses as to legal proceedings and mis-

cellaneous matters.

The schedules at the end of the Act contain a table as to the thicknesses of walls in relation to their height, both in the dwelling-house and warehouse classes. A list of materials to be deemed fire-resisting is also included, specifying as such: brickwork, granite and stone, iron, steel and copper, oak, teak and other hard timber when used for beams or posts, iron posts protected by plastering, oak, teak or other hard wood two inches thick for doors or for treads, strings and risers of staircases, slate tiles, brick and terra-cotta, flag-stones for floors over arches, but not when exposed on the under side or supported at the ends only, concrete and other materials from time to time approved by the Council.

E. A. E. Woodrow.

THE "SKY-SCRAPER."

HE extremely tall building is the outgrowth of the conditions that our present civilization has imposed upon us. The discussion of the rights and wrongs of it we will leave to others, but it may as well be admitted that "the sky-scraper has come to stay."

The movement against it is sure to fail, because it tries to block an avenue of money-making with purely aesthetic reasons. The marvel-lously rapid growth of our cities, with the consequent necessity for huddling many people together in a small space, and the enormous price of land in business centres, make tall buildings very desirable; while modern steel construction, elevators and other inventions make them possible. Whatever is desirable and possible, in the make them possible. eyes of the money-maker, is sure to exist, and equally sure to stay, so long as the need lasts.

one utilitarian objection to very lofty buildings is, that they will cut off the daylight from the streets below. It is true it would be very undesirable to build them on both sides of a narrow street. But we have the public squares and parks surrounded by business streets, which would look all the more noble if built up twenty stories to a depth of, say, sixty feet; then dropping down to fifteen stories for forty feet, and after that letting the limit of height be twelve, ten, eight or six stories, according to the width of the streets. If all the public squares of New York were lined with twenty-story buildings, much more than the whole office community would be accommodated better than now, and, even from a distance (down much more than the whole office community would be the harbor, for instance) the profile would give a very imposing

The æsthetic objection is, that they are ugly and cannot be made

beautiful. It would indeed be sad and most regrettable if our cities were doomed to be filled with structures more ugly than those they already contain. But let us first inquire whether any really honest and earnest effort has yet been made to give consistent beauty to the and earnest enort has yet been made to give consistent beauty to the "sky-scraper." How were the Greek temple and Gothic cathedral made beautiful? Chiefly by making them true, and by permitting the style to evolve itself naturally from the needs and conditions under which they were built. The artist-builders of those noble structures used all the skill, knowledge and fine sense of the beautiful of which they were presented to make them delightful to the even ful of which they were possessed to make them delightful to the eye, and monuments of man's genius for all time. But beauty alone was not the first or fundamental thought. Use and construction came first, ornament afterward, and the style was the inevitable outcome of the method of construction and the material used.

But our architects generally attack the problem of the modern business-building in quite a different spirit. Instead of trying to emphasize the internal construction in the external features, and to express in the character of the design the use for which the building is intended, the façade is usually nothing more than an ornamental curtain of stone or brick, patterned arbitrarily after some past style, and intended chiefly to hide and disguise the con-It has no more organic connection with the building behind it than a theatre drop-curtain has with the stage scenery. These walls do not express strength. In many cases they could not support even themselves, but depend on the steel skeleton behind

for stability. How can true beauty be based upon a lie?

Mr. John Moser, F. A. I. A., is an enthusiast in his profession, and one who believes religiously that its high and noble functions should, first and always, be consecrated to the cause of truth, in which alone lasting beauty may be achieved. The accompanying design for a twenty-story building, of which he is the author, represents months of close study of the subject. He has attempted to show what can be done by honestly and manfully approaching the problem from the constructive side of it, and so designing a tall building that will be consistent and true in every respect. He realizes that the subject is not the most inviting one to the artist's efforts, but that, as a necessity of modern life, it should be frankly and earnestly attempted. It is a case of Pegasus hitched to the wood-cart -- but he is Pegasus still. It is not a temple or cathedral that is to be created, but, though only a huge place of business, the idea of beauty, consistent with truth, is never lost sight of.

What are the requirements and conditions which should direct and limit the architect in this work? These he must constantly keep before his mental vision.

First, the office-building is entirely and purely a place of business. There is room there for nothing else. Utility is, therefore, its first requirement. There must be all possible floor-space; abundance of direct light (not less than two-fifths of the outside wall-space should consist of windows); perfect provision for artificial light, heating and ventilation; roomy corridors illuminated by direct light; and ample elevator service, stairways and fire-escapes. It must be fitted with all the conveniences that modern life insists on and has made possible — in short, it must have everything and be everything to enable every move of business to be a "rapid transit." It must be of fireproof construction. Everything should be simple and strong, and as nearly indestructible as possible, as well as rich in effect, to express the idea of successful business.

The building must be of steel construction. This is so well known, and the problem has been so thoroughly solved, that it is not worth while to touch on more than one or two reasons for it. The walls for stone or brick construction would have to be so thick that much valuable floor-space would be lost, and it would be impossible to pierce them for sufficient window-space without dangerously weakening them. The great problem is, therefore, to harmonize the exterior form with this steel lattice framework, as the temple and cathedral so perfectly express stone construction. There is no precedent to help. He who looks to the past for a prototype is sure to be on the wrong track. The arch is manifestly out of place here, except, perhaps, as an inferior decorative form, while in stone construction it is one of the most important factors. The first and basic idea with the architect in the design here presented is truth. There must be no huge arches (for the sake of grand effect), which express nothing, and could not stand but for the support of the hidden steel framework behind. It is his object to express, not hide and falsify, our incomparable modern steel construction, so that any one, at a glance, may see how it is built, and so feel that it is strong and majestic.

Since iron and steel will corrode in the atmosphere, it is necessary to cover them up, though for weathering purposes only. Stone, brick, terra cotta, copper or any other healthy weathering material, resting on, and clamped to the steel, need not prevent the exterior forms from expressing the interior functions and construction of the

building.

As all arch form is based on fundamental constructive principles, which are totally different from those of our steel construction, so new forms and combinations must be found for the modern building. Stone construction depends almost entirely on its weight and compression for its rigidity, and needs a great breadth of wall or buttress to carry its strain lines. Steel, being so much stronger than stone, and as strong for tension as compression, demands a totally different treatment. With it may be built a square box of a house of indetinite height, with thin walls, and it will be very strong by virtue of



braces, bolts, tension-bars and anchorings. The whole fabric becomes a firm lattice cubical box, with nearly equal powers of resistance and cohesion in every direction, and, at the same time, leaves almost the entire walls for openings. It looks like a spider-web, but it is strong enough to stand an earthquake. Outside battens of thin steel beams (adopted in this design), well bolted to the core of the building, strengthen it in the same way that outside battens strengthen

a packing box or trunk.

Yet a structure should not only be strong, and look so, but it should be a "thing of beauty." The elevation of a building has been appropriately called its "crown of glory." The most important consideration on this point is the question of proportion. Bad proportions make the case absolutely hopeless. The truth proclaimed by the eternal triangle of the pyramids holds good through all ages. A good building is always divided into three main divisions. In the Greek temples, the number three always forces itself on your attention, in the stylobate, the order, the cornice and. self on your attention, in the stylobate, the order, the cornice and, in fact, everywhere else. These main divisions are generally subdivided into threes, and so on down to the small details. divided into threes, and so on down to the small details. Proportion becomes impossible if all the parts are of equal size. So the tall building is divided horizontally into three main divisions. The lowest part should be square, or, if possible, longest horizontally. The middle one should be longest vertically, and the upper one longest horizontally. Observe the Monument of Lysicrates, which, of all past arch-forms, is, in mass, the nearest to this problem, unless it be the Saxon keeps. The division of an upright mass into the proportions of three, five and two generally gives reasonably satisfactory results, though there seems to be no absolute formula, for it often happens that a division that is just right in one case is wrong in another. The conditions of good proportions must be felt by the in another. The conditions of good proportions must be felt by the designer, and when he succeeds it will at once be seen and recognized. It applies to everything, ornament, color, etc., as well as to great mass forms. It is an indefinable condition of absolute rightness pervading everything, so that nothing is too large or too small. As a twenty-story building is, of necessity, inordinately high for its breadth, instead of emphasizing its height, the architect has here taken special pains in the opposite direction, to keep it from looking attenuated, a common fault in our lofty buildings. The attempt to do this by making a slanting roof over the upper three or stories, thereby losing a large amount of renting space, he considered

as rather begging the question than answering it.

Decorative ornament has three main functions—to exprethought or idea, to emphasize, and to give richness of tone. building being designed as a place of business in a busy street, there

building being designed as a place of business in a busy street, there is little room for the expression of ideas, poetic or otherwise. Here people rush to and fro, and everything is wasted except what "he who runs may read." Hence, ornament is used here chiefly to emphasize construction and give richness of tone where it is needed.

The whole façade should be an integral whole, a unit, having head, body and feet. It should grow up organically from the ground to the top stone, as a tree in the forest, and not be, as is often seen, a number of parts, each complete in itself, piled one on the top of the other. The strength of the structure should be emphasized by being heavier and simpler at the bottom than at the top. The flowers grow at the top of the bush, not at the bottom. "Nature is the prototype of all art." Every carrying form should gradually diminish as the building goes upward. The Greeks have illustrated this principle most beautifully in the entasis of their column. The pine tree shows the same thing. Special care should be taken that pine tree shows the same thing. Special care should be taken that around the bottom, a little higher up than the actual wear and tear reaches, it should be as simple and indestructible as possible, that it may not be like a certain great building, only a few years old, on which a lot of fine, delicate stone-cutting around the main entrance is already battered into a hopeless ruin. It will be observed that Mr. Moser's design accords remarkably well with these fundamental principles.

Here it may be well to let the architect speak for himself, that we may the better understand his aim, and just how he labored to solve this problem. "After the most mature consideration," he says, "I found myself getting very close to the Classic. The pilasters gave me, perhaps, the most trouble, for here I had to lay violent hands on all precedent. It would be absurd and silly to pierce with windows a stone pilaster, thus weakening what was intended as an element of strength. But in the business-building we must have windows everywhere, and I finally came to the conclusion that, in steel construction, there would be nothing weak or illogical in twin battens (which these pilasters are), well braced and tied together, with a common head and foot for both, the space between them being pierced for windows. These windows in no way interfere with the steel continuous. for windows. These windows in no way interfere with the steel construction, but rather publicly express the same. A stone pilaster could not be thus treated without greatly injuring its usefulness, but in the steel no harm is done. So I pierced them, bases, caps and all, dressed them up in as agreeable forms as possible, and you see the result. I thus get two projecting piers, two and one-half feet by one and one-half projection, about one hundred feet high in an unbroaden line wet by this manipulation that do not look labble attenuated on line, yet, by this manipulation, they do not look lanky, attenuated or spindling. I found no difficulty in harmonizing my design with the regulation stories until I came to the architecture of the cornice, but here I found a higher story necessary to fill the requirements of proportion. I gave the rooms a coved ceiling, and pierced the middle band of the architrave with small cove windows, to suggest the form of the ceiling, and also to lighten the mass of the architrave, which

was apparently too heavy for the slender lines below to carry, while proportion demanded its width (up-and-down). In order to gain the necessary room for the abutment of all projecting members at the party-wall line, I returned the latter ten feet on the main front, treating it very simply. This gave room to finish the architrave legitimately all around, not just chop it off at this point as I would otherwise have been forced to do. You see only a small piece more of the party-wall than will show itself, hit or miss, unless the build-

ing is seen across a whole block.
"I would not be a special advocate for tall buildings, but whether "I would not be a special advocate for tall buildings, but whether they have 'come to stay' or not, I would ever plead for truth, proportion and beauty in all buildings. I believe the successful and satisfactory office-building of the future will honestly express its interior functions in its exterior forms, as well as the street construction, which is the carrying skeleton of the whole fabric. The rosette or button, either singly or in rows, will become one of the foremost decorative motives. It will be omnipresent, because it so well expresses the enchange and belting together of the steel skeleton. decorative motives. It will be omnipresent, because it so well expresses the anchorage and bolting together of the steel skeleton. The masses of this building will be thin and slender, rather than broad and massive. It will look strong and powerful, as the deer or gazelle, rather than as the elephant or rhinocerous. It will be elegant by virtue of its proportions, its refined simplicity and a skilful handling of its few ornamental forms, that will make the whole look alive and vigorous. It will be essentially useful and practical. It will tell exactly what it is, and pretend to be nothing else, thus attaining dignity and majesty. When that time comes we shall have an individual style of our own. We shall get it without the seeking, and it will be worthy or base, just as we are worthy or the seeking, and it will be worthy or base, just as we are worthy or base."

F. C. GORDON.

CONSTRUCTION.1 - XXVI.

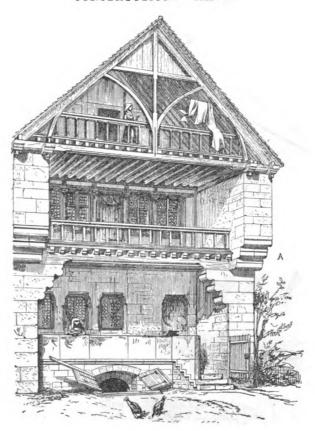


Fig. 134.

ORBELS play an important rôle in civil constructions. We have previously given the reason; it remains for us to follow the varied applications of this method. There are, in that portion of Champagne which touches Burgundy, and vice vêrsa, houses otherwise very simple, constructed during the thirteenth and fourteenth centuries, which have a gable toward the street and form on the exterior a sort of posch with beleavy above sheltered by a strongly precise. a sort of porch with balcony above, sheltered by a strongly-projecting roof. The entire system consists merely of cleverly-combined corbels. Thus (134) the side walls carry a first corbelling at right angles to them, intended to carry a bressummer receiving the ends of the second-story floor-beams which also bear upon the recessed wall. This bressummer is surmounted by a balustrade. A second corbelling A gives a projection to the side walls which protects the balcony and receives a gable truss whose tie-beam carries the flooring of the garret and permits the introduction of provisions into it. The recessed enclosure on the line of the first-story wall is only a framing of wood roughly plastered. Notice that the second corbelling A

¹From the "Dictionnaire raisonné de l'Architecture Française," by M. Viollet-le-Duc, Government Architect, Inspector-General of Diocesan Edifices, trans-lated by George Martin Huss, Architect. Continued from No. 988, page 94.

(134a) carries above its last course H, a portion of vertical wall HIso as to weight the ends of the corbelled stones by a mass of masonry. Further back is the wood framing G, which closes the the double plates N, which carry the roof, and which surmount the whole length of the side walls, are furnished on the outside with strong key-pins O, which maintain the head of the corbelling. This very simple arrangement is found in very many peasants' dwellings. But we will now see how the constructors reached the point of using corbellings with billings with the life of the constructors reached the point of using corbellings with billings with the life of the constructors. corbellings with skill in richer, more complicated, more important structures, while submitting themselves to dispositions demanded by a special requirement.

The problem is to pierce a doorway in the re-entrant angle, formed by two buildings which meet at right angles, a very convenient arrangement, moreover, and which was frequently insisted upon by the inhabitants of a manor or a dwelling; to arrange that this door shall give access to the ground-floor rooms on the right and left, then to the second story; to overcome the splay in which the door is cut, to recover the right angle formed by the meeting of the main walls, of which at

least one will make a partition wall as it is prolonged; and to then establish above this door and in the re-entrant angle, a service staircase connecting the second story with the upper stories. By the use of iron beams covered with plaster we could to-day easily succeed in satisfying this programme. But if it is required not to falsify the construction, the thing becomes less easy.

Let plan A, Figure 135, be the ground-floor of this construction, and plan B the second story. At C is shown the door which opens in the splayed wall; at D the interior piers; at E the horizontal projection of the interior corbels supporting the re-entrant angle and at F Let plan A, Figure 135, be the re-entrant angle and at F the horizontal projection of the corbellings carrying the salient angle; G G are the arches counterbutting the reentrant angle, and carrying the second-story partition walls. We show (136) the exterior view of the doorway with the corbellings which act as a hood for it, and which carry the salient angle of the service staircase, shown on the second-story floor-plan B. If necessary, these corbellings may mask machine colations for defending the doorway. Figure 137 gives the interior view of the door-way with the corbellings carrying the re-entrant angle; at G are the two arches counterbutting the corbellings and supporting the partition walls above. The newel of the staircase ascends in the centre H of the splayed wall and the interior and exterior

corbellings are kept in equili-brium by the opposing its staircase well. It has been weights of the two salient angles of this staircase well. attempted in later times to obtain analogous results by means of pendentives; but pendentives load the masonry below much more than this system of corbellings; require larger-sized materials and a greater amount of them; and problems in stereotomy, difficult to plot and still more difficult of execution. This then is no progress at all, unless one considers it progress to give pleasure to a stone-cutter to show his knowledge to the detriment of the purse of him who builds.

Fig. 134a.

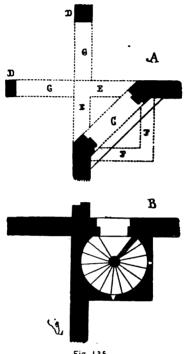
If during the fourteenth and fifteenth centuries the ecclesiastical constructions modified but little the methods applied to the art of constructions modified but little the methods applied to the art of building by the architects of the thirteenth century, it is not the same with civic constructions. These take on a freer manner; the processes are more elaborate, the methods more varied; the architects show proof of that independence of which they show the lack in the religious monuments. This is in reality because the current of life turned away from religious architecture and bent all its energy to civil constructions. Under the reigns of Charles V and of Charles VI, there is a rapid development of architecture

applied to public edifices, to castles and to mansions. No difficulty daunts the constructor and he succeeds by carrying further the principles admitted by his predecessors in executing constructions the most daring and the most skilful from the double point-of-view of solidity and art. At that epoch a few seigneurs knew an extraordinary impulse to constructions; they loved them as they should be loved, leaving to the artist perfect freedom, both in regard to the methods of execution and the character which fitted each structure.1

The Duke of Burgundy and the Duke Louis of Orleans, the brother of Charles VI, caused to be raised residences, half fortress, half palace, which indicate in the artists charged with these works a rare experience and knowledge and perfect taste; and in the seigneurs, who ordered these works, a wise and intelligent liberality which has hardly been, since that time, a peculiarity of persons sufficiently rich and powerful to undertake great works.

If Louis, Duke of Orleans, was a great spendthrift of public funds and if he abused the state of madness into which the King,

his brother, had fallen, it must be admitted that, in the capacity of a wealthy seigneur. he built like a man of taste. It was he who rebuilt, almost en-tirely, the Château de Coucy, who built those of Pierrefonds and Ferté-Milon, and greatly enlarged those of Crepy and Béthisy. All the buildings Béthisy. All the buildings undertaken by order of this prince are of rare finish and rare beauty. There will be found there what are so difficult to unite in one and the same building, perfect solidity, strength, elegance and that tasteful splendor which leaves nothing to caprice. From this point-of-view the buildings of Coucy, raised about 1400, have all the majesty of Roman buildings and all the charm of the most delicate designs of the Renaissance. Apart from the style peculiar to the epoch we have to recognize in the architects of this time a more marked superiority in construction over those of the sixteenth



century; their conceptions are broader and their processes are more certain and more wise; they knew better how to subordinate details to the whole and how to build more solidly. The great Hall of the Château of Coucy, called the Salle des Preux (Hall of the Nine Worthies) is a perfect work; we can here show only some parts which relate to the subject matter of this article.

This Hall, in the second story, is above a ground floor whose rails first, in the second story, is above a ground noor whose vaults rest upon a row of columns and the lateral wall. It is not less than 16 metres wide and 60 metres long; that is to say, it can easily hold 2,000 persons. On one side, its windows open on the country through the thick curtain walls of the château; on the other side, on the interior court. Two enormous double chimpers is and the side mindows are size in number there or the neys warm it and the side windows are six in number, three on the outer side and three on the court, without counting an immense window to the south, opening under the soffite of the vaulted wooden The side windows are also surmounted by dormer win lows

¹Nothing strikes us as worse and more ridiculous than to wish, as happens only too frequently nowadays, to impose on architects something else than programmes; nothing gives a more gloomy idea of the state of the arts and those who profess them, than to see artists accept all the extravagances imposed by persons ignorant of practice, under the pretext that they pay the bills. Tailors have, on this score, more moral courage than many architects; for a good tailor will say, if one orders a ridiculous coat: "I cannot make you a garment which will disgrace my house and which will make a laughing-stock of you."

good tailor will say, it one orders a introduction of the which will disgrace my house and which will make a laughing-stock of you."

This evil dates sufficiently far back, for our good Philibert Delorme wrote about 1575:

"I desire to inform you, that for thirty-five years gone, and more, I have boot 1575:

"I desire to inform you, that for thirty-five years gone, and more, I have observed in diverse places, that the major part of those who have made or desire to make edifices, have begun them even so hastly as they have lightly considered of them: thereby has resulted most often repentance and derision, which as a says follow those ill advised: in such wise, that they who think to understand truly that which they would do, have required the contrary of that which was possible and ought, indeed, to be done. And if by good chance they sought from some one advice touching their resolve and undertaking, it was a master-mason, or master-carpenter, as one is wont to do, or perhaps some painter, some motary, or others who hold themselves for well-informed, and for the generality have hardly better judgment and counsel than those who ask it from them—often times likewise I have seen great personages who have deceived themselves, for as much as the most part of those who are about them, never wishing to gainsay them or desiring to please them, or indeed, because they themselves, and is a fine invention, it is very well imagined, and shores truly that you have can excellent understanding; never will such another work be seen in the world. But the flatterers think quite otherwise, and talk of it behind his back, or perhaps elsewhere. In this wise many seigneurs cheat themselves and are satisfied with their achievements."

We might go on and cite in extenso the six first chapters of the treatise of Philibert Delorme; we refer our readers to it as a masterpiece of good sense,

We might go on and cite in extenso the six first chapters of the treatise of Philibert Delorme; we refer our readers to it as a masterplece of good sense, of wisdom and probity.

in the roof. We give (138) a section of this hall taken through one of the side windows with the dormer above it, and (139) an interior perspective of this same window which has not less than four metres



Fig. 136,

opening. The flat arch which spans it is built of ten voussoirs set with great care which, held in place by the curtain-wall, fully four metres thick, have remained horizontal without any iron framework. In the perspective view we have supposed the roof removed at A,

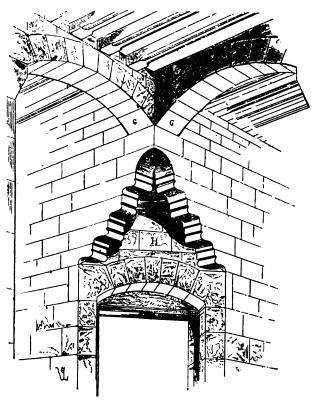


Fig. 137.

so as to show from the interior the construction of the dormer-window. These dormer-windows (see the section) open on the broad chemin de ronde (footway behind the battlements) so that

at need, the soldiers posted in this footway could speak to the persons in the hall. The defenders were sheltered under a little roof supported by the battlements and isolated piers A. Daylight,

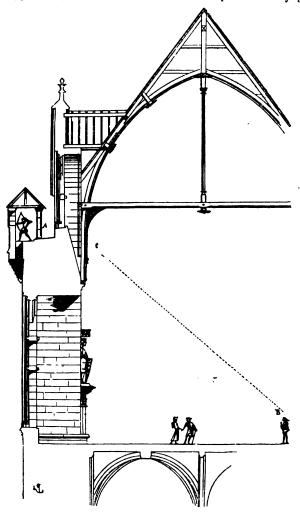
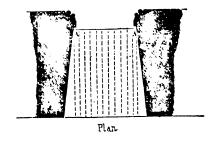


Fig. 138. Salle des Preux, Chateau de Coucy.

then, entered the hall through the dormer windows without hindrance and this construction is on so great a scale that from B in the



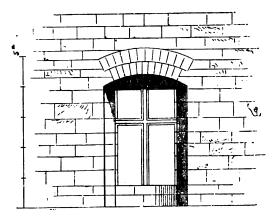


Fig. 140.

hall, one could not see the top of the roof of the chemin de ronde as is shown by the dotted line $BC^{\, 1}.$

¹These great halls were habitually floored with flags; they were washed every day and gargoyles were arranged to carry off the water. "The blood of the victims ran away on every side and poured out by the openings (rigel-stein) left near the sills of the doors" (Nibelungen Lied).



No trace of the roof remains and nothing is found to day of all this noble construction, except the windows and the lower part of the dormers, which are enough, however, to give an idea of the stately arrangements. In the hall of the Salle des Preuses (hall of the Female Worthies) in the same château, are still to be seen windows which are vaulted as shown in Figure 140, so as to support a considerable load of masonry. The skew-backs of the double discharging arches project over the splay as far as the impost A of the window (see the plan), so as to avoid warped surfaces in the vous-soirs whose soffits are thus made parallel. The upper arch alone shows on the outer face of the wall and completely relieves the lintel.

It is understood, of course, that the constructors employed these powerful methods only in buildings of importance, less calculated to resist Time's ravages than the destructive contrivances of men. It seems even that in the interiors of châteaux, where there was no fear of an attack, the architects had tried to divert the occupants eyes by very elegant and dainty forms. We know that Charles V had built in the Louvre, at Paris, a staircase and galleries which passed for masterpieces of the builders' art, and which compelled the admiration of all connoisseurs up to the time when these precious

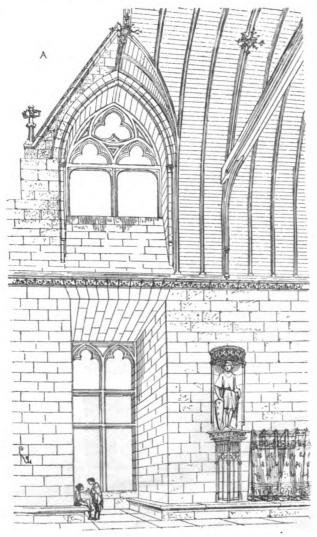


Fig. 139. Salle des Preux, Chateau de Coucy.

edifices were destroyed. Staircases in particular, which present innumerable difficulties to builders, excite the emulation of mediæval architects. There was no seigneur who did not wish to have a degré more elegant and better designed than that of his neighbor and, in fact, the little that remains to us of these indispensable accessories of châteaux always indicates a certain pretension as well as great ability in draughting.

For the more modest dwellings of townspeople as well, the construction becomes during the fourteenth and fifteenth centuries, lighter, more studied. It is then that they commence to want very large windows on the public highway, still more necessary because the streets were narrow; they adroitly combine wood with stone or brick; they endeavor to save room in interiors by diminishing the supports and by encroaching upon the public highway with projections of the upper stories; so that as a consequence, constructors had to return to timber-framing for their fronts.

We do not wish to unduly extend this article, already long enough, or to include here examples which properly belong to other sections in this "Dictionary"; we have endeavored merely to indicate the profound differences separating civil from religious construction in the Middle Ages. Our readers will do well to refer for more ample

details to the words: Boutique, Charpente, Chéneau, Egout, Escalier, Fenêtre, Fontaine, Galerie, Maison, Pan de Bois, Plancher,

[To be continued.]



N a previous letter we spoke of the Chicago drainage-canal and its threatened pollution of the St. Louis water-supply. At the time, a lengthy investigation was held, the

water in the Illinois and Mississippi Rivers being sampled at various points, in order to determine just how much it was affected by the small amount of Chicago sewage which much it was affected by the small amount of Chicago sewage which then passed through those streams. But the investigation has produced no tangible results and all this time the great drainage-canal is nearing completion. The most serious phase of the question from a financial point-of-view is that the new water-works plant, No. 2, which has just been completed at a cost of about \$7.000,000 is located on the Mississippi. It is thus readily apparent that before long the St. Louis water-supply will be poisoned with the dregs and waste of Chicago pork-packing establishments and the ordinary sewage of that town. It is true that the new water-works are located in the Missouri-River current of the Mississippi, the former stream debouching into the latter only four or five miles above the northern debouching into the latter only four or five miles above the northern city-limits. However, practical results will, undoubtedly, show that in this distance the Missouri current could easily be poisoned, on in this distance the Missouri current could easily be poisoned, on account of the swift current, the accompanying whirlpools and ebullitions. If the water pumped from the Mississippi is soon found to be too poisonous and filthy at the site of the new works, but one course, in our opinion, lies open if the latter are to be utilized, namely, pumping direct from the Missouri itself, four or five miles above, by a conduit overland. We think that perhaps the Board of Water Commissioners had this in mind when the works were located. However, so far as quality is concerned, the Missouri in any case would not be much of an improvement over the Mississippi, except that it is freer from the dangerous nitrates and nitrites. The Meramec River, a beautiful stream flowing into the Mississippi to the south of the St. Louis, is most available for a water-supply. The water is very clear and pure, the river-bed being of the famous Meramec gravel, and the supply is abundant enough at all times to afford sufficient water for many years to come. It is six miles from the southwestern city-limits at its nearest point.

Although it makes a rather sudden digression, we now wish to say

Atthough it makes a rather studen digression, we now wish to say something regarding the new Planters' Hotel, which was opened to the public several weeks ago. This magnificent enterprise is the result of a resolution on the part of the Autumnal Festivities Association. With the possible exception of the Waldorf Hotel in New York, the new Planters' is the finest and costliest hotel in the United States. It stands on the site of the famous old hostlery whose name it bears, on Fourth Street, and extending from Pine Street to Chestnut Street, and is bounded in the rear by a private alley running through the block. Within the walls of the old hotel, ate and slept many of the world's famous men, among them the great ate and slept many of the world's famous men, among them the great novelists Dickens and Thackeray. So the new house has a reputation to uphold and, judging from the present outlook, it is likely to do so. The building is shaped somewhat like an E, the three wings facing on Fourth Street. This is a most excellent method of making all rooms outside rooms. The arrangement does not apply to the ground floor and first floor however they being built all the way. ground-floor and first floor, however, they being built all the way through. They are lighted by means of skylights, receiving light from the two courts above. The building is ten stories in height, through. They are lighted by means of skylights, receiving light from the two courts above. The building is ten stories in height, the first being of Bedford stone, plainly dressed, but in good taste. The remaining stories are brick of a dull grayish-brown color and so they will show the ravages of soft-coal smoke—the curse of St. Louis—less than if they were of almost any other color, while in strong contrast the stone will show up the soot very rapidly. On the other hand, the stone will gradually assume the dark color of the brick. The trimmings are also of Bedford stone. The façade of each of the three wings fronting on Fourth Street has two rounded bays running from the second to the ninth floor. There are also two similar bays on the Chestnut Street and Pine Street sides. The similar bays on the Chestnut Street and Pine Street sides. central porch on Fourth Street, extending over the sidewalk, is of iron and is supported by Grecian Ionic columns. On entering the office one is struck by its lack of light. There is not sufficient natural light; the skylights, one over each of the two main staircases, do not provide as much light as they were evidently expected to, that is, so far as the office is concerned, or, we should more properly say, the rotunda. The latter is not as high, airy and cheerful-looking as we are accustomed to see in other hotels of note, it being necessary to provide artificial light at all times. We think this

fault could be remedied, in a measure, if white glass were substituted for the stained glass in the skylights. The furnishing of the rotunda is very rich indeed, some beautiful marbles being employed which contrast well with the handsome electroliers. The grille work about the two elevator-shafts in the rotunda, as well as the rest of the building is very handsome, being of heavy copper bronze, but of light design.

The main staircases leading from the rotunda to the parlor-floor, at the north and south respectively, are each divided into two flights. Above the landing of each is an oval-shaped skylight in stained glass, receiving light from the two courts which divide the building into the three wings. On the south wall above the south landing is to be placed a freezo entitled "The Birth of St. Louis," by Paul Connection land artist and praisi of Jonis Blanca and Boxis. by Paul Cornoyer, a local artist and pupil of Louis Blanc and Benjamin Constant, Paris. On the north wall, above the north landing, is to be a corresponding fresco by the same artist entitled "The Landing of Laclede," the founder of St. Louis.

The parlor-floor is the most sumptuous in the entire building, and to describe it in detail would require more space than we have at our disposal. At the centre of the east side of the front hallway, running north and south, is one of the game of the whole structures the

north and south, is one of the gems of the whole structure, the Turkish room, one of the most complete that we have yet seen; far surpassing that of the Waldorf Hotel in New York. It is divided surpassing that of the Waldorf Hotel in New York. It is divided into three parts, all of which are separated merely by supporting pillars. There are two very handsome mantels in brown marble and multi colored mosaics, all uniting to make an odd, but decidedly Oriental design in keeping with the other furnishings. Many of the tables and chairs are of exquisitely-carved ebony of a peculiar shape and design decidedly Turkish. Turkish armor over the mantels, Turkish tables and Turkish rugs prevail, some on the floor, and some made into cushions for the large settees which divide the room from the main hall, the hall side of same being in dark-green leather. The electroliers are of most unique design, in dark and light bronze, the former being the background and the latter appearing in the shape of numerous and various-sized crescents. Some of the bric a brac is very handsome, including beaten brass lamps, vases, etc. The woodwork is colored in light green, red and yellow, and architecturally, Saracenic details prevail.

The main hallway, mentioned above, is done in cream, light green and gold. The wainscoting is of dark and light brown marble.

The electroliers are of very heavy old brass with perfectly round opaque globes. At the northern end of the hall on the left is the opaque globes. opaque globes. At the northern end of the name on the left is the restaurant, and adjoining it, an apartment which is not exactly a drawing-room, but is used for general purposes — for meetings, conferences, etc. Adjoining the latter is the private dining-room for guests occupying the "bridal suite" at the northeast corner. The latter is occupying the "bridal suite" at the northeast corner. The latter is a most sumptuous set of apartments. The private drawing-room is in the Empire style. Surmounting the very handsome mantle are three handsome pieces of Sèvres, two vases and a jardinière. The furniture is very attractive, and is of mahogany with bronze-gilt mountings as is usual with Empire furniture. The main dining-room is at the southern end of the hall and runs the entire width of the building on Chestnut Street, from Fourth Street to the alley. It is a very plainly-finished but elegant room. The culinary department, including kitchen, pantries, serving-rooms, china-rooms, etc., run along the alley, connecting the main dining-room and the restau-

rant at the opposite ends.

The upper floors of the building, eight stories, contain the sleeping-apartments, and the attic devoted to servants' apartments. The guests' rooms are fitted up in various woods, each floor being finished throughout in the same wood. The same fault is to be found with the sleeping apartments of this hotel as with those of the most modern hostelries, namely, extreme plainness in every way when com-pared with the costly and sumptuous decoration of the remainder of the structure. There is a certain amount of sham and deception in this, which is extremely distasteful, and the transition experienced on going from the parlor to the first sleeping-floor is very sudden. Of course, the expense would be too great to ornament every nook and corner as lavishly as some parts of the building, but why not equalize things a little, and use some of the money spent on over-decoration in making the sleeping-apartments more inviting? We have in mind in making the steeping-apartments more inviting? We have in mind a first-class hotel in one of our principal Eastern cities where there are attractive etchings, water-colors and steel-engravings in the rooms, together with attractive furniture, wall-paper, etc., while the remainder of the interior is elegantly but plainly finished.

Off from the office on the ground-floor to the southeast is located the gentlemen's cafe. This is piainly but neatly furnished in oak. West of the cafe and opening on Chestnut Street is the hypercom-

West of the café and opening on Chestnut Street is the bar-room. This is fitted up more or less in the style of the café. The barbershop is one of the most elaborate apartments of the great building. The entire room is in white marble, and the handsome electroliers

and brackets give it a most inviting appearance.

The art display at the annual St. Louis Exhibition was, in our opinion, poorer this year than usual. There has been a lack of effort somewhere to gather together a few, at least, of the world's famous pictures, and the space which was last year devoted to a very interesting collection of rare vases, antique fans, etc., has this year been given up to a reproduction of the agricultural and horticultural display of the State of Missouri at the Columbian Exposition! Local talent, of a certain kind, that is, has exerted itself, because there were some pictures on exhibition which it was a crime for any

one ever to have painted. The display of photographs was as large, if not larger, than usual, and the numerous exaggerated and ridiculous poses exhibited in many of the prints, mostly intended to catch the eye of our country cousins, were as omnipresent as usual. Mr. F. Hopkinson Smith exhibited a fine set of water-colors, all scenes in about Venice, and these were the most pleasing pictures in the exhibition. Mr. Smith certainly understands his subjects, because even to the minutest detail of color and effect his work is extremely faithful to the originals; on first sight his pictures bear the unmistakable imprint, or, we should say, inspiration of the native artists. The color of the proverbially rich blue water of the Adriatic is sometimes a trifle overdone, but we attribute this chiefly to Mr. Smith's evident enthusiasm over his delightful subjects more than to Smith's evident enthusiasm over his delightful subjects more than to any ignorance. There are altogether thirty-two pictures in the set. A painting by Jules Muenier, member of the Société des Artistes Français, entitled "The Watering Place," is an interesting study from life, representing a full-grown boy in bared legs on horseback riding across a bit of water, the horse stopping to drink a moment. One of Detaille's war pictures, entitled "Champigny," is one of that long series of pictures, with nothing distinctive about it, produced by the famous student of Meissonier. A picture entitled "The Communion" was exhibited by Henry Lerolle, French artist. This is a companion picture to his "Organ Rectal" owned by the Metropolitan Museum of New York. "The Communion" is a weird picture as to coloring and represents some nuns receiving communion from the priest's hands at the altar-rail. It is a very large canvas. "The Little Brother," by Alfred Guillou, is a striking delineation of the French peasant type. The picture represents a peasant holding in arms a child. Both faces are strikingly of the French peasant type. Von Uhde exhibited his picture entitled "A Sewing-Bee in Holland," which represents in a delightful way the "sewing-school for scandal" as it is in the Netherlands. Mr. Bringhurst, of St. Louis, exhibited his figure for an electric-light. He also showed three sketches which are of local interest chiefly, namely, one for an equestrion statue of Canaral Sharmer reliable. He also showed three sketches which are of local interest chiefly, namely, one for an equestrian statue of General Sherman, which will, we hope, some day be placed in Twelfth Street, another for a figure in the new St. Louis Union Station, and a third for a monument to Laclede and Chouteau, the former the founder of St. Louis. Mr. Bringhurst also exhibited fourteen other subjects. M. de Munkacsy was represented by his famous picture, "The Story of the

Hero."

The Missouri Medical College is erecting a very handsome limestone-front building next to its dispensary on Jefferson Avenue, between Lucas and Washington Avenues. It is four stories in height and the style is pure Grecian-Ionic influenced by the modern French school. The fourth story has somewhat of a balustrade effect, that is, as far as the façade is concerned, similar to those on the Woman's Building at the World's Columbian Exposition. In the case of the Medical Building the balustrade serves the purpose of a story unlike the roof-gardens on the Woman's Building. The large Classical windows and main portal as well as the pure Classical Classical windows and main portal, as well as the pure Classical details generally lend a most satisfactory and pleasing aspect to the building. Classical designs are quite the rule in St. Louis these days; almost every building of note that we have in mind, now in course of erection, is in one of the Grecian or Roman styles. Mr. Van Blarcom's new house in Westmoreland Place is a most pleasing specimen of Romanesque architecture. The Medical College's new building and Mr. Wm. McMillan's house in Portland Place are evi-dences of the appreciation in which white St. Louis limestone is now Heretofore, it has been deemed fit only for paving, founbeing held. Heretofore, it has been deemed fit only for paving, foundation and other like uses, but its pure whiteness, durability and susceptibility of very smooth finish (not polish) have shown it to be a most desirable stone. Local builders send to every State, from Maine to California, and this is no exaggeration, for good building stone, when they can find the very best twenty feet or so beneath the surface of the ground on which they are erecting a building. Of course, for red, green and other colored stones they have to seek elsewhere, but the idea of using Bedford stone from Indiana, freestone from Illinois, and sandstone from the interior of Missouri seems absurd when a so much better stone is to be found a few feet beneath the ground on which the city rests. Actual examples in beneath the ground on which the city rests. Actual examples in various parts of the city show the greater durability of the St. Louis limestone over all others.

A wealthy resident in one of the fashionable "Places' one of the handsomest art galleries in the country, and by far the handsomest in St. Louis. One interesting point in connection with it is that all the decorations were removed from the gallery in his it is that all the decorations were removed from the gallery in his old house, down town, to the new one, bodily, even to the stained-glass windows. He could hardly have left the latter behind, because they are very handsome. The woodwork of the room is antique oak and in design English Gothic. In fact, the whole room bears an unmistakably English air. The doorway leading from the main hall to the room is at one side of the latter. To the left is a large and cheerful and decidedly English fireplace, while opposite it in the middle of the room stands a heavy oak seat large enough to seat four or five persons. On the right are two doorways separated by a wall-space leading to an alcove. Just opposite the doorways are the group of four stained-glass windows, separated by mullions in the English Gothic style. The owner possesses some very fine pictures, and very sensibly has them all closed in glass-fronted frames to preserve them from smoke and dust. Work is progressing very rapidly on Station No. 3 of the St. Louis Water-works System at Baden, the extreme northeastern portion of St. Louis. This is to be a distributing-station in connection with Station No. 1, located at Bissel's Point. The large five-mile conduit conducting the water from Station No. 2, at Chain of Rocks, to the Bissel's Point Station passes through the site of the Baden plant. At a point on the site, a gate-house has been erected for directing a portion of the water to the settling-basins there located and, after settlement, pumping water to the new and thickly-settled portion of the city to the west of Grand Avenue which the Bissel's Point Station (No. 1) is unable to reach. The Baden plant will cost the city nearly \$1,000,000 before it is finished, but it will soon pay its cost in giving to the West End proper water facilities, which means higher licenses.



subject in a daily paper asserts that it is, and roundly accuses the architects of almost criminal carelessness; and, as if this were not bad enough, Mr. J. Horbury Hunt, the President of the New South Wales Institute of Architects, rushes into print in support of these assertions. It is somewhat reassuring to find that Mr. Hunt's opinions are not shared by any of his brother architects, for, at a meeting of the Institute called for the purpose, the matter was somewhat warmly debated, and the articles characterized as unjust and unnecessarily alarming in their tendency. The president, too, was taken to task for giving his support to the newspaper writer's highly-colored assertions. The fact of the matter is that Sydney is no more liable to destruction by fire than any other city of a similar size; but a large warehouse in George Street was recently burned to the ground, and here, as elsewhere, after every conflagration, swarms of dismal fire-prophets arise, like flies after rain, and flit in print about the ruins, with that dismal raven-croak of theirs—"I told you so!" and the architects have to bear the brunt of their attacks. There are, of course, many buildings here which are a menace to the city's safety; but for these the architects should not be held wholly responsible.

The public seems to forget that the architect is his client's servant until the contract is signed; and if the client wishes to erect a building of the greatest possible size for the smallest possible sum, the architect is by neces-ity compelled to follow his instructions. So long as he does not fall foul of the Building Act—such as it is — and so long as the insurance companies are prepared to indemnify him in case of loss by fire, why should the capitalist care? And he doesn't care, accordingly. I am certain that I am not overstating the fact when I say that there is not an architect practising here who is not capable and willing to erect buildings which shall be practically fireproof, but this means expense; and while, as I say, the underwriters are content to take the risk, very few capitalists will be found to sacrifice themselves upon the altar of public welfare. The writer of the articles in question has, of course, some reason on his side, but he is undoubtedly an alarmist, and does wrong in making us bear the burden of sins which are not our own. A great fire is not always an unmitigated evil, and one here now would, at least, give an impetus to the building trades, which sadly need some stimulant, for they are practically moribund. It is but a small consolation to know that our friends in Melbourne are in a worse case than ourselves. So bad is it there, that at a recent "Smoke Night" of the Victorian Artists' Society the Chairman thought it necessary to make some prefatory apologetic remarks for the amusement they were about to indulge in. Their objects at such gatherings were, he said, analogous to those of that Coopers' Guild, which, some hundreds of years ago, went singing through the streets of a plague-stricken city to remind the despondent that the plague with its evils was but temporary, while Nature with her bounties was eternal. Their object was, therefore, to lighten the burden of a dismal time.

Dismal, indeed, it is, all over Australia; and to make matters still worse for the poor architects, all public buildings in New South Wales are again being carried out by the Government Architect's Department, despite the well-intentioned efforts of a former Ministry to have all works, above £5,000 in value, submitted for competition among private practitioners. An elaborate Code of Conditions for regulating competitions under this system was formulated, and two competitions have already taken place—the first for a gaol at Grafton, and the other for a lunatic asylum at Kenmore, near Goulburn. In addition to these, Mr. J. Kirkpatrick was commissioned by the Government to complete the Sydney Hospital, to which I have before referred in these letters. The Gaol competition was won by Mr. H. A. Wilshire, and the work has since been

carried out under his supervision. The Kenmore Asylum, after much delay, has been definitely placed in the hands of the Government architect, and he has compiled a plan in which he has sought to combine the best features of the three premiated designs. Of course, the Government is legally right in acting so; but it is a moral outrage that, by the payment of a few hundred pounds in premiums, any Ministerial body should have the right to deprive the authors of the premiated designs of all the credit of their work. Worse still, the Government architect declares that the Grafton Gaol and the Sydney Hospital work could have been carried out in his department at a cost of little more than two per cent; whereas, Mr. Wilshire and Mr. Kirkpatrick were each paid five per cent. It is needless to say that no architect believes this statement, and some returns asked for, in support of the assertion, will be eagerly looked for. It is curious to note, however, that in the architectural branch of the Education Department — according to some figures recently published — the cost of designing and superintending the erection of our State schools, in salaries alone, is nearly six-and-a-half per cent. To this must be added the rental value of the very expensive office-buildings occupied by the staff, cost of material, etc. So that if the Government architect's figures are correct, no time should be lost in wiping the architectural branch of the Education Department out of existence.

In the above-mentioned Competition Code, one of the conditions is that a margin of ten per cent above the original estimated cost shall be allowed; if this should be exceeded, the Minister reserves the right to reject the design. But the Government departments, with no competition to fear and ample time in which to work up their designs, exceed their own estimates with apparent impunity—often by as much as fifty per cent. The Ocean Street tramway, which has just been completed, is a case in point. The estimated cost was £80,000, and on these figures its construction was recommended by the Public Works Committee, and approved of by the Railway Commissioners. But the actual cost was within a few pounds of £160,000! The power-shed alone—which is an architectural nightmare—cost £21,000; that is, rather more than sixty per cent in excess of the estimated amount, viz, £13,000!

CREOSOTE STAINS.

HATEVER the origin of shingles may have been, it is certain, says A. Ashmun Kelly in Painting and Decorating, that shingle staining is a modern American method of contributing to the external decorative appearance of residences and other buildings. That they fulfil that object there can be little doubt, even though it be true that the staining is not always satisfactory. Nothing of human origin ever is.

A recent writer calls attention to the practice, prevalent in this country, of keeping rural houses glaring with fresh paint, instead of allowing them to become age-stained, as rural cottages of Europe are. Now, the stains we use are, in a measure, the equivalents of those produced by time on bare wood. Rare effects can be had by blending two shades together, and the single-tone stains are also beautiful and effective. There is no use denying their original beauty at least. People like them, and what people like they have, no matter what artisans may say against the object of their liking.

Creosote has for years been known as a most effectual wood preservative. It was first introduced in England in 1858, and in America in 1865. It is extensively used in all parts of the world for this purpose. It is a product of coal-tar, that wonderful and prolific source of so many useful and beautiful products. The distilling process gives us several grades of the article creosote, containing various hydro-carbons. The odor is unpleasant, pungent and strong, but soon disappears upon exposure to the fresh air. An idea of its remarkable penetrative power may easily be obtained by placing it upon a thin board. In a little while it may be detected upon the opposite side by its odor.

opposite side by its odor.

Thus may be seen that, for an outside stain, a creosote preparation possesses peculiar value. Linseed oil is the vehicle employed to carry it, and the several beautiful shades given these stains are obtained from ordinary painters' colors, ground in oil to the last degree of fineness. It is upon this point that transparency of colors hinges. Coarsely-ground colors will not give clear translucent shades. This, I believe, is all the secret about the manufacture of creosote combinations, but some of them are gas-stains, or are made from petroleum oils, and are not by any means to be recommended. It is difficult, if not impossible, to get lead paint to remain over such stains, or to keep the stain from striking through the lead coat. True, shellac varnish, that universal panacea for all painters' difficulties, good for a cut finger or a damp wall, may be used over the stain to prevent trouble, but the operation is costly, and prevention is much better.

The question of durability having been raised, it is worth while to inquire into this objection. Obviously, being in part creosote, a very lasting matter, creosote stain, considered solely from this point-ofview, is durable. But as to holding its color, that is another question. Probably it does it no better than ordinary paint. Some think, not so well. A well-known manufacturer of such stains declares that he has known of its retaining its original color for nine years, and he adds that it usually wears well from four to seven years. Much, however, seems to depend upon how the work is done. For instance, wet or green shingles are inimical to good wearing,

just as with paint. This same gentleman tells of seeing a painter dipping shingles, one side of which was coated with ice. Where shingles are tied up in bundles, it would be well to untie them, and spread them out to dry, before dipping them. It is not unfrequently the practice, too, to employ cheap labor, such as boys or unskilled men, to do the dipping, and good results must not be expected where such is the practice. A quarter of a century's experience has taught me that it takes a skilled mechanic to sandpaper or putty well; it's not a boy's or laborer's work. Neither is shingle-staining, simple though the work seems. Mr. Coppins tells us that he "has seen dry-rot in both stained and painted shingles." This could not possibly occur where thorough work has been done.

There was quite a hue and cry against creosote stains in the city of Buffalo, some time ago, and inquiry elicited the fact that some

There was quite a hue and cry against creosote stains in the city of Buffalo, some time ago, and inquiry elicited the fact that some painters there, of prominence, I understand, had been in the habit of changing the original stains by adulteration, and in one or two cases (I forget which) one manufacturer brought suit, where a shopmade mixture had been substituted for the goods called for by the architect's specifications. This led the New York Association to discuss creosote stains and staining, at one of their sessions, and Mr. Cabot, the well-known manufacturer, was invited to prepare and read a paper, which he did. Since that, I have heard nothing concerning this matter.

Finally, as to the durability of creosote stains, it may be said that careful treatment is sure to render the most satisfactory results possible. The wood to be treated should be thoroughly dry. The stain should be kept stirred, so as to yield uniform color and density of

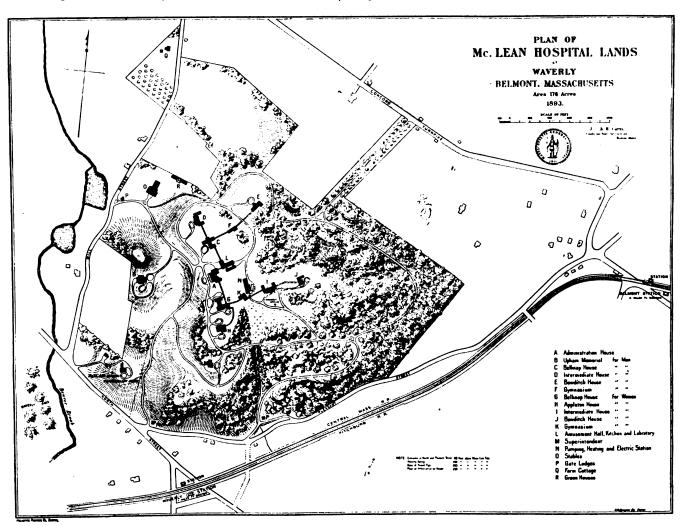
to run into a cistern, allow the first few rains to run elsewhere, after which no trouble may be looked for. It would not poison a person who should drink such water, it would simply taste or smell unpleasantly. Where gas-tar or petroleum-oil stains are used, it is likely that there would be trouble with the water as long as the stain lasted. A paint compound containing tar and petroleum and applied to a flat tin roof, I know to have vitiated the water ever after. Should the creosote stains contain poisonous pigments, such as the chromates of lead, their use would be objectionable on roofs intended to catch water for cisterns. Those stains only should be used that owe their coloring to non-poisonous pigments, such as ochres.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

SOME OF THE BUILDINGS OF MCLEAN ASYLUM FOR THE INSANE, WAVERLEY HILLS, BELMONT, MASS. MESSRS. SHEPLEY, RUTAN & COOLIDGE AND SHAW & HUNNEWELL, ARCHITECTS, BOSTON, MASS.

[Gelatine Print issued with International and Imperial Editions only.]



material, and only linseed oil used to thin with. The boy or day-laborer forgets to stir the stuff, and the boss puts in coal-oil or turpentine. I never yet found a journeyman who did not object to using the creosote stains. It burned his hands or destroyed his eyes. It was poisonous. In part, these charges were true. Creosote hurts the eyes and the skin, but it is not poisonous. On the contrary, it possesses remarkable healing powers. It is efficacious on cuts, burns and sores, when other remedies fail. It at first causes some pain, but this soon passes away and healing begins. It is used to cure meat. Men who work in creosote stain-works are healthy, and are never known to complain of the stuff injuring them in the least. They become accustomed to it. Painters would, too, if obliged to use it more frequently. A master-painter, Mr. McInness, tells us that it burned his paint-pots out. Salt, also, would destroy his paint, and salt can hardly be said to be poisonous. Another objection to creosote stain is, that it vitiates water that is intended for culinary uses. In any case where the water from a freshly-painted roof is arranged

THE, "SKY-SCRAPER," A DESIGN BY MR. JOHN MOSER, ARCHITECT, NORFOLK, VA.

SEE article under this title elsewhere in this issue.

STORES ON PORTLAND STREET, BOSTON, MASS. MR. JOHN L. FOX, ARCHITECT, BOSTON, MASS.

This building is just finished.

DOORWAY AND MANTEL-PIECE AT NEWPORT, R. I. MEASURED AND DRAWN BY MR. J. B. BLAIR.

HOUSE FOR DAVID RICE, ESQ., MARION, MASS. MR. A. W. RICE,
ARCHITECT, BOSTON, MASS.

EPWORTH M. E. CHURCH SOUTH, NORFOLK, VA. MESSRS. CAR-PENTER & PREBLES, ARCHITECT, NORFOLK, VA.

[Additional Illustrations in the International Edition.]

UPHAM MEMORIAL BUILDING, MCLEAN ASYLUM FOR THE INSANE, WAVERLEY HILLS, BELMONT, MASS. MR. W. Y. PETERS, ARCHI-TECT, BOSTON, MASS.

[Gelatine Print.]

MEN'S INTERMEDIATE BUILDING, MCLEAN ASYLUM FOR THE INSANE, WAVERLEY HILLS, BELMONT, MASS. MESSRS. SHAW & HUNNEWELL, ARCHITECTS, BOSTON, MASS.

[Gelatine Print.]

GENERAL VIEW OF THE MCLEAN ASYLUM FOR THE INSANE, WAVERLEY HILLS, BELMONT, MASS. [Gelatine Print.]

THE "MARBLE-ROOM" IN THE HOUSE OF MR. VAL C. PRINSEP, R. A., HOLLAND PARK ROAD, KENSINGTON, LONDON, ENG. MR. PHILIP WEBB, ARCHITECT.

BRICK-VAULTING IN THE GRAMMAR SCHOOL, READING, ENG. MR. ALFRED WATERHOUSE, ARCHITECT.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

JET: JETTY.

BOSTON, MASS., December 3, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT: -

Dear Surs, - I do not like to differ with Mr. Ernst in regard to any of the curious Colonial etymologies which he describes in so interesting a way, but it seems to me that our word for the moderninteresting a way, but it seems to me that our word for the modernengineering structure, consisting in a long pier projecting into the
sea, which our forefathers knew nothing about, is more likely to be
derived from the French "jetée," meaning exactly the same thing as
the modern English word "jetty," than from "jet," meaning simply the
projection of a cornice or overhanging story. This word, "jet," by
the way, is still in common use among the New England country
carpenters, to denote both the amount of projection of a cornice,
and the cornice itself. "How much jet will there be to the eaves?" is one of the first questions that an architect has to consider with his rural contractor; and the same individual soon after begins to inquire when the detail drawing for the "jet" will be ready.

T. M. CLARK.

THE CHARGE FOR MANTEL-PIECES, ETC.

MONTREAL, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Surs, - Would you kindly state what you consider a fair and reasonable charge for making designs and details for mantel-pieces, furniture, selecting hangings, tiles, electric fixtures, etc., when such work is done in connection with full professional services on private residences.

Also what would be a reasonable commission for banking fixtures of stone-fittings? Yours respectfully, B. T. B. Yours respectfully, and stone-fittings?

[The usual charge for all these things is from ten per cent on the cost, as a minimum, to twenty per cent, or more, where the work of design bears a considerable proportion to the cost of the article. Eds. American Archi-

TO SECURE WOODEN SLEEPERS.

WASHINGTON, D. C., November 24, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, - Can you inform me of an approved method of securing the wooden-floor sleepers in fireproof buildings to the iron beams?

Yours truly,

W. M. POINDEXTER.

[The simplest way is, after the terra-cotta or other arches are done, to take a 2" x 3" or 2" x 4" piece, or larger, according to the spacing between the iron beams, cut a notch in each end, fitting the upper flange of the iron beam, and wedge in place, at right angles with the iron beams, by laying in obliquely and driving into position with a mallet. Concrete or cinders may then be filled-in between the sleepers. A common method, also, is to give the sleepers a dovetail section, and lay in the concrete of the arch or filling. Eds. American Architect.]

THE FAMILY WEIGHING-MACHINE.

SAN DIEGO, CAL., November 13, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT: -

Dear Sirs, - I would like to suggest the placing of the family scales in the bath-room as the most proper place for that new feature

of the well-furnished dwelling.

The only honest method of weighing one's self is when minus one's clothes, and as the bath-room is the one room in the house that is used as a common undressing apartment, it seems as if that should be the place selected for locating this handy nickel-in-the-slot ma-

The nickels used to operate the contrivance might form the family missionary fund and be removed half yearly or annually, to

The platform of the scales, I will say, would be, when at rest, flush with the floor, and the glass-faced disk, with its figures and pointers, together with the upright case connecting disk and platform, to be quite out of the way, should be set into the wall.

By arranging the machine after this manner, that is to say as a close fixture of the room, it could not offer any obstruction to persons visiting the said room, and the disk-frame and platform might even be made to contribute something to the room's attractiveness.

Respectfully, B. FRANK LEEDS.



Boston, Mass.—Exhibition of Millet's "Sower" and other Paintings loaned by Quincy A. Shaw, also, Ancient Chinese Buddhist Paintings, the Works of Adolf Menzel, and Drawings by John Trumbull: at the Museum of Fine Arts.

seum of Fine Arts.

Drawings by Charles Dana Gibson: at Doll & Richards, 2 Park St.,
November 30 to December 12.

Pictures by Joseph Lindon Smith: at the St. Botolph Club, November 26 to December 12.

Exhibition of Pictures of New England Life by New England Painters: at Jordan, Marsh & Co.'s, opened November 27.

Dielman's "Marriage of Dr. Le Baron," and Water colors by William Adam: at Williams & Everett's, 190 Boylston St., opened November 26.

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17. Water-color Exhibition: at F. Keppel & Co.'s, 1 Van Buren Street.

CLEVELAND, O. - Eighteenth Annual Exhibition of the Cleveland Art Club: December 17 to 22.

New York, N. Y. — Thirteenth Annual Fall Exhibition of the National Academy of Design: opens December 10, closes January 5.

Loan Exhibition: at the Metropolitan Museum of Art, New North

Wing opened November 5.

Fifth Annual Exhibition of the New York Water-color Club: at the Galleries of the American Fine Arts Society, 215 West 57th Street, December 1 to 22. Zschille Collection of Arms and Armor: at Tiffany & Co.'s, Union

Square.

Exhibition of Historical Book-bindings: at the Grolier Club, Decem-

Pastels after Celebrated Originals in European Galleries, by J. Wells Champney: at Knoedler's, 170 Fifth Ave., closes December 23.

Pictures by Adolph Artz: at William Macbeth's, 237 Fifth Ave.,

December 1 to 22.

"Little Girl Pictures" by Miss Maria Brooks, and Water-colors by Datch Artists: at H. Wunderlich & Co.'s, 868 Broadway, opened

Exhibition of Du Maurier's Original Drawings for "Trilby": at the Avery Galleries, 368 Fifth Ave., December 3 to 15, also, Paintings by A. C. Howland: December 4 to 22.

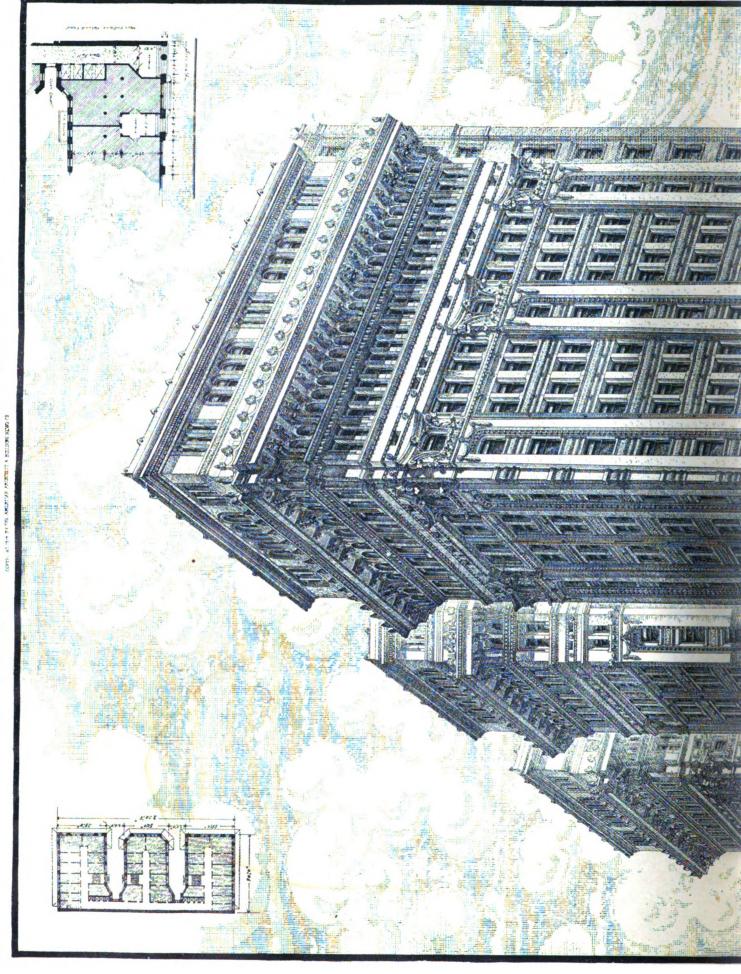
Philadelphia, Pa. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 16.
Sixty-fourth Annual Exhibition of the Pennsylvania Academy of Fine Arts: opens December 17, closes February 23.

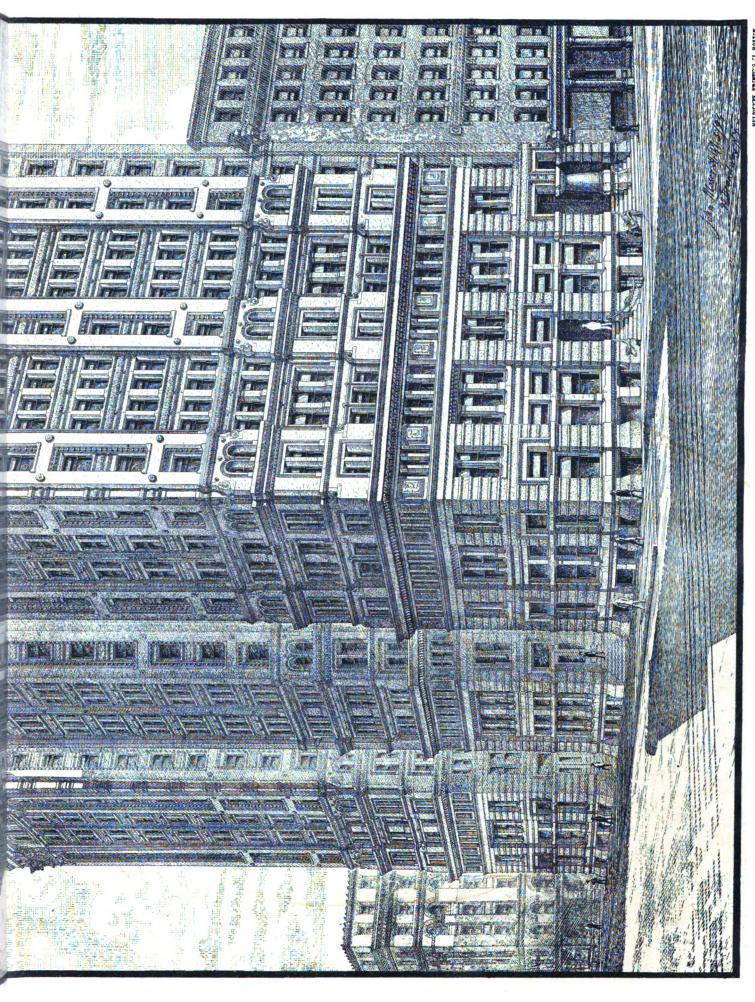
PROVIDENCE, R. I. - Exhibition of Works by Contemporary Rhode Island Artists; at the Art Club.



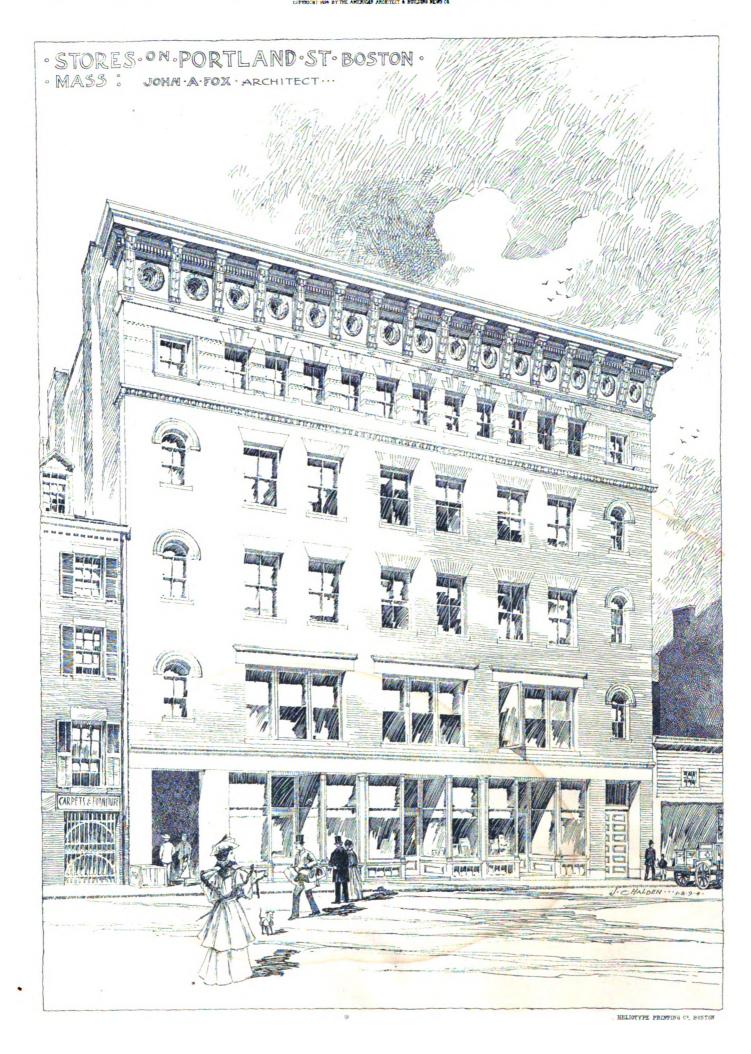
SIR CHARLES NEWTON. — The death is reported from London of Sir Charles Newton, the archæologist and antiquary. He was born in Herefordshire in 1815, and was educated in Shrewsbury School and Christ Church, Oxford University, of which he was a Faculty student. In 1840 he was appointed one of the assistants in the Department of Antiquities in the British Museum, which post he held until 1852, when, being anxious to rescue from oblivion some of the ancient sculpture on the coast of Asia Minor and on the islands of the Ægean, he obtained the appointment of Vice Consul at Mitylene. After having spent several years in exploring the archipelago he discovered at Budrum (the ancient Halicarnassus) the site of the mausoleum erected by Artemisia, and carried on extensive excavations at Chidus and Branchidæ, between 1856 and 1859. The results of his discoveries consist of a fine collection of sculptures from the mausoleum and other places, deposited in the British Museum, which is indebted to him for a very interesting collection of Greek inscriptions, vases, coins, and other antiquities. In 1860 he was appointed British Consul in Rome, in 1861 keeper of the Greek and Roman antiquities in the British Museum, and in 1880 professor of archæology in University College, London. He was elected an honorary fellow of many colleges. At the time of his death he held the honorary post of antiquary to the Royal Academy. He was the author of many works. His wife, a daughter of Joseph Severn, was a celebrated artist. She died in 1866. — Exchange. SIR CHARLES NEWTON. - The death is reported from London of Sir

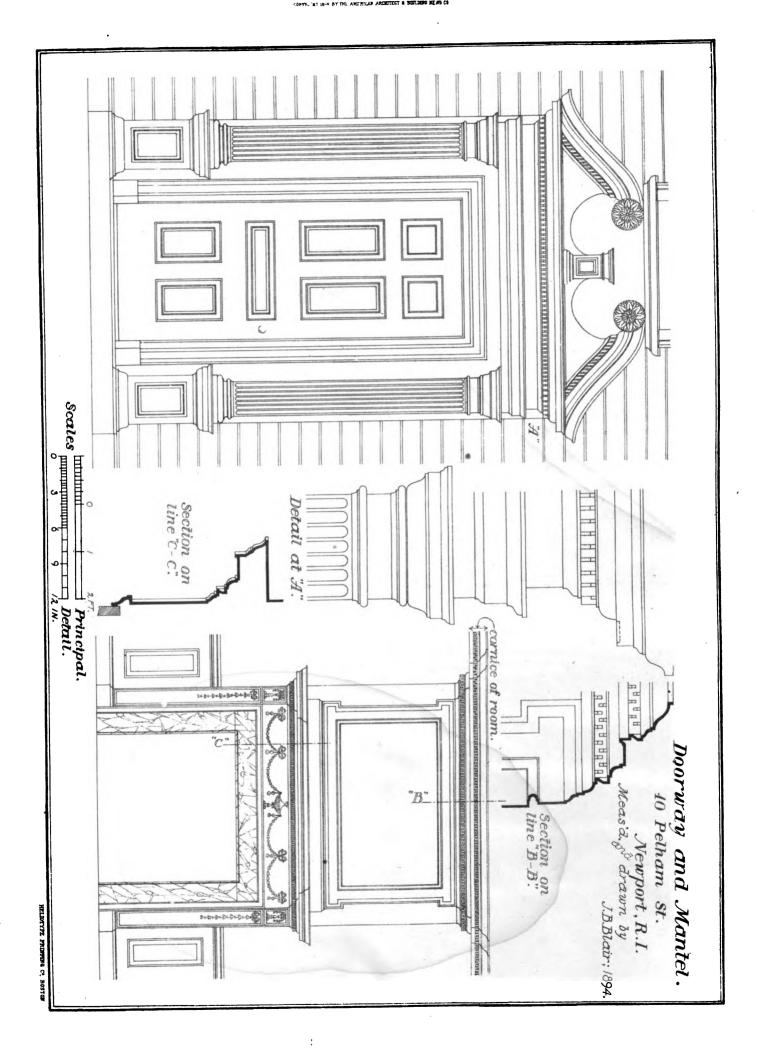
S. J. PARKHILL & Co., Printers, Boston, U. S. A.

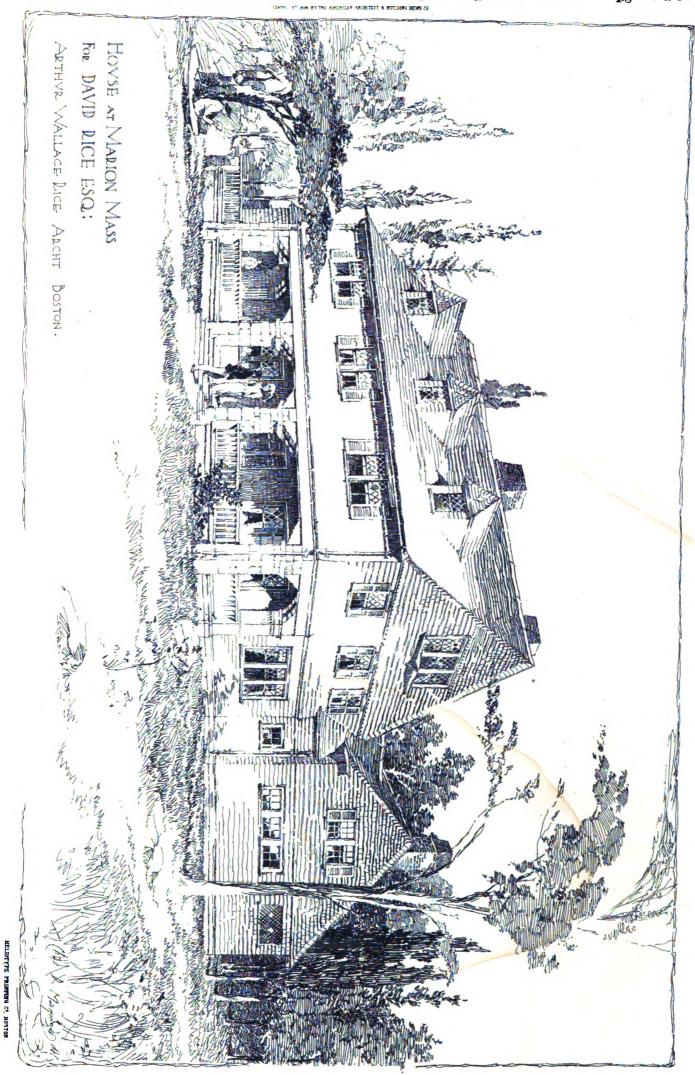


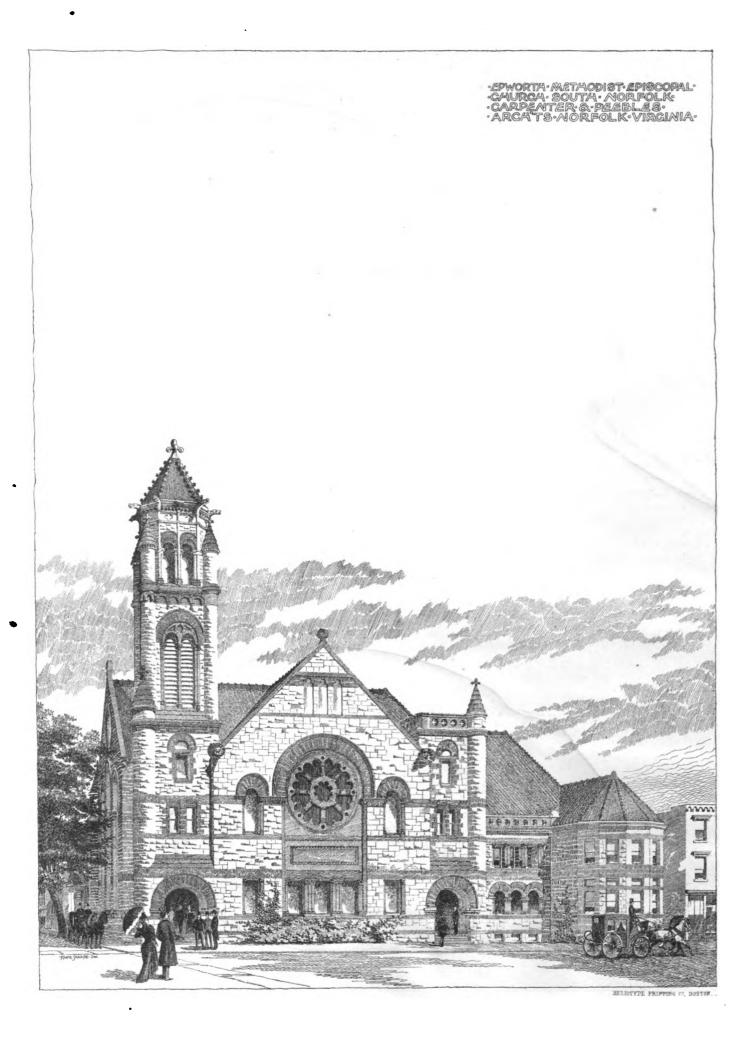


PO. 939. AMERICAN ARCHITECT AND BUILDING NEWS, DEG. 3. 1594,









No. 990.

Entered at the Post-Office at Boston as second-class matter.

DECEMBER 15, 1894.



SUMMARY: -

The Alleged Corruption in the New York Building Department.

Societies. . . . ILLUSTRATIONS: —

Church of St. Martin in the Fields, Wissahickon Heights, Philadelphia, Pa.—The 71st Regiment Armory N. G., S. N. Y.. New York City.—House at Beverly, Mass.—Shelter and Look-out at Castle Island, Boston, Mass.—The California State Building, World's Columbian Exhibition, Chicago, Ill.—Competitive Design for a Primary School-house, Woburn,

Mass.

Additional: Choir-screen in the Church of St. Luke, Germantown, Pa. — Doorway of Sta. Engracia, Saragossa, Spain. — Door in the Fürstenzimmer, Velthurns. — A Châlet in the Canton of Berne. — Monuments to M. Pamard, at Avignon, France, and to M. H. Maze, at Viroflay, France. — Baroda and Central India Offices, Bombay, India. — The New Parliament Building, Berlin, Germany. — Memorial to C. W. Cope, R. A. — The Entrance Front of the Bishopsgate Institute, London, Eng. — Queen's Hall, Langham Place, W., London, Eng. — Competitive Design for St. Aidan's Church, Walton-le-Dale, Eng. — Interior of the Same. COMMUNICATIONS:

The Union League Club-house, Chicago: A Correction.

 Jetties.
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T is so difficult to overcome a fixed habit, that there is good reason for requesting our subscribers to take particular heed this year in filling out their checks for next year's subscription, to make the payee accord with the corporation's title as expressed in the subscription bill. A little care in this respect will go a long way to minimize the trouble which will naturally fall upon the former publishers and ourselves.

HE Record and Guide makes a very timely observation in regard to the grievances which so many people cherish against the Building Department in New York. It says that, in times past, many people have brought to it complaints of extortion and imposition on the part of the officials of this department, but such has been the universal terror of what these officials could, and probably would, do to revenge themselves upon any one who gained their ill-will, that in every case the complaining party refused to allow his name to be used, or to appear publicly in any way in regard to the matter. Until now, the fear inspired by this tyranny has been, no doubt instifiable, and it has been in many against the continuous transfer to the second transfer to t doubt, justifiable; and it has been, in many cases, a question whether an aggrieved person should bear his griefs in silence, or be driven entirely out of business, or out of the city, by the systematic persecution of the gang, against a member of which he had given information; but, as the Record and Guide well says, the danger is, for the present, past, and now is the time for those who know of the rascality of city officials to proclaim their knowledge for the public benefit. Scores of trembling scoundrels, no doubt, now await with terror the disclosure of their acts of extortion and corruption, and the disclosure should be made, so that the Department may be thoroughly cleared of dishonesty. If it is not made soon, the robbers will recover their nerve, and form new leagues for mutual protection, and it will then be infinitely harder to get rid of them, or avoid their vengeance. As the Record and Guide says, the popular movement against municipal corruption soon subsides. Already there are signs that the decent people of New York think that they have done enough, and want to get back to their own affairs again. This is just what the subtle and untiring schemers who fatten on corruption count upon. They have

hidden their heads for the moment, but they are as busily at work as ever, cautiously insinuating their tools into places not sufficiently guarded, warding off attacks from officials, as yet not accused, whom they know to be useful to them, and making preparations to recapture, step by step, the power which has for the moment been wrested from them. New York went through exactly the same experience some twenty-three years ago, when the Tweed ring, which had ruled and robbed the city for many years, was overthrown at the polls. A few of the most prominent rascals fled to Europe, or suffered judicial penalties, but, after this sacrifice had been made to public sentiment, the threads of corrupt influence were soon gathered up, and the old system of extortion, blackmailing, terrorism and violence by degrees reëstablished, only to be overthrown again, after many years of impunity and success, by the recent election. How soon it will again revive remains to be seen, but architects and builders can do more, perhaps, than any other part of the unofficial community to prevent its reëstablishment, by denouncing immediately and unsparingly every attempt at bribery or unfairness that comes under their notice. Of all the decent sorts of business, those relating to building offer the best field for the blackmailer, and if the service of the inspection of building affairs is kept honest, the other parts of the public administration are not likely to go very far wrong.

T will be remembered that, a few weeks ago, the contractor for paving the upper part of Avenue A, in New York, was prevented from fulfilling his contract, and the work that he had already done was ordered removed, on the ground that, by furnishing paving-stones split out at the quarries in New Jersey, he had violated a law of the State of New York, which requires that all stone used in State or municipal works shall be dressed within the State or municipality, and that none but citizens of the United States shall be engaged to labor on When his work was first interrupted, Quinn, the such stone. contractor, claimed that the statute did not apply to pavingstones, which are simply split out with a sledge-hammer, and not "dressed," within the meaning applied by the trade to that word; but he has, it seems, now taken more radical ground, and a petition was introduced the other day in his name into the Supreme Court, praying for a writ of mandamus to compel the Commissioner of Public Works to make, or renew, the contract with Quinn, on the ground that the statute, for the alleged violation of which his original contract was aunulled, is contrary to both the State and Federal constitutions, as abridging the privileges of citizens, and impairing the obligation of contracts.

POLITICIANS, temperance workers and others will do well to take note of an ingenious scheme carried out by the trades-unions in Boston. For the last two or three years, as building in Boston has been almost at a standstill, the agitators of the building trades have had very little excuse for a display of activity, and the death of the most influential one among them served still further to reduce the apparent importance of the united organizations in the eyes of the public. This, apparently, was not to be borne, and, some weeks ago, it was announced with much solemnity that, at a meeting of the Building Trades Council, it had been resolved to instruct all the members to vote for no-license at the approaching city election. It must be remembered that Boston is quite closely divided on this point. Although the vote is always for license, it is usually carried by a small majority, sometimes not much over four thousand votes. A change of two or three thousand votes, which is much less than the number controlled by the Council, would thus change the result; and people interested in temperance observed the new movement with attention, mingled with surprise, while the liquor-dealers, it is needless to say, were thrown into a state of consternation. What private negotiations may have then taken place, we cannot say, but, a week before election day, the announcement was made that the matter had been happily settled, and that the instruction to members of the building trades to vote for no license was withdrawn. For the information of those who imagined that the building trades had been suffering under an attack of moral enthusiasm, it was explained that certain liquor-dealers had employed non-union labor in fitting up their saloons; or, at least, had imported some fixtures which, although made by union labor, came from other States, and that the no-license instruction was given with a view to remedying this enormous wrong. Now, however, the public was informed, "assurances" had been given, and the controversy was at an end.

OME of the liquor-dealers say that if any non-union labor No was employed in any saloon, the cases must have been few, and the employment inadvertent; which is likely to be true, as the liquor-dealers know well enough that they could not afford to lose the support of the "friends of labor" so that the plan for destroying at a blow a vast and lucrative business seems to have had the smallest possible pretext. We know that the "friends of labor" are renowned for their purity of motive, and that those in Boston stand at the very centre of the immaculate constellation; but one cannot help reflecting how easy it would be for the leaders of an association of labor organizations, in a place where such persons were capable of entertaining mercenary thoughts, and where the license vote was close, and fees for "organizing," and perquisites for handling strike funds, few and far between, to make a timely attack upon the liquor-dealers, and extort from them in private the supplies necessary to maintain worthily the champions of Labor in its everlasting struggle against the oppressions of Capital.

THE shock which city engineers must have felt in reading Professor Henrici's papers of a year or so ago on street-planning, in which he advocated the theory that city streets should not only be curved, but that they should vary in width in different portions of their length, will recur, with renewed force, when they learn what he thinks about street levels. It is needless to say that the ideal of rustic Highway Committees, and of all except the most enlightened town and city engineers, is a street-plan in which all the streets run in straight lines across a level plain. Where, as is frequently the case, Nature interferes with this scheme, by presenting hills and valleys in place of a level plain, the town engineer who can get the necessary appropriations digs off the hills, fills up the valleys with the excavated material, and happy at having got the better of Nature, runs his bee-line highways over the remodelled landscape; while the engineer who cannot get appropriations still lays out his roads in straight lines, and explains to people who grumble at the succession of ascents and descents which they present, that they must make their complaints to Nature, not to him. Professor Henrici's view, as in the cases which he formerly considered, is totally opposed to that of the average Highway Committee-man. Premising that, as every architect knows, a site somewhat raised above the surrounding level is of immense advantage to the appearance of public buildings, monuments and other important objects, it follows that a street-plan by which such elevated sites are provided in reasonable number is, architecturally, very desirable, and he says, with truth, that a man who can design a system of streets for a town in such a way that, by taking advantage of the topography, all the public buildings and monuments will appear to the best advantage, while the streets themselves are easy in grade, and cheap in construction, because of the small amount of cutting and filling required for them, will, sooner or later, find his art appreciated.

WE hope that this is true in Germany, for Professor Henrici's own sake, for he has certainly, by his writings and designs, revealed possibilities in city street-planning which no one seems to have dreamed of before; but even in his own country the genius of this great artist seems to be coming but slowly to recognition, and among us his doctrines would be greeted with a chorus of derisive howls from all the people who have anything to do with the establishing of city street-lines. It is true that, even here, men like Mr. Olmsted, or Mr. Vaux, or Mr. Bowditch, are occasionally allowed by municipal magnates, in deference to the demand of people of taste, to lay out a park, or even a single suburban street, but their design is generally received with a very ill grace, if, indeed, it is not surreptitiously obliterated as soon as they are safely out of the way; and the idea of committing to them the design of an entire quarter of a town is not likely to occur to any one. Nevertheless, it is not too much to say that the beauty and

loveableness which could be given to a town, or a part of a town, by such skilful artists are absolutely inconceivable to people who, like the vast majority of mankind, have never thought of a city street as anything more than a streak on a map, or a mass of struggling mortals ploughed by strings of electric or cable-cars. As the artistic sense develops among us, no doubt the feeling for picturesque and beautiful streets will grow also, but we have so few examples to point to that it is all the more necessary to pursue the theoretical discussion of the subject by such means as we can.

OPEAKING of the best way in which to take advantage of

the natural conformation of the ground for laying out streets, Professor Henrici says that, where the grade is gentle, the best effect is obtained by making the profile of the street form a slight concave curve. Of course, as this would make the upper part of the ascent the steepest, such a profile could not be adopted except for grades so gentle that no part would be fatiguing; but he says that, in the case of grades too steep for this profile, it is best to diminish the steepness by curving the street in plan, to suit the contours of the ground; and in this way, while the fall can be kept uniform, the perspective effect will be similar to that of a straight street with curved profile, and what he calls the "sterile, dead and stupid" air of a straight street with uniform fall will be avoided. Even this, however, he thinks is less displeasing than the hump-like aspect of a street which forms a convex curve in profile, or in which a steep ascent is followed by one less steep. As, however, every street must fall in some direction, to allow the water to run off, it is unavoidable that a comparatively steep ascent should occasionally be succeeded by one less steep. In these cases, the hump-like effect should be disguised by making a fork in the streets, at the point where the change in grade occurs, or arranging a curve in plan, or a slight break of some sort, by which the eye will be attracted away from the unpleasant profile of the street. Where steep ascents cannot be avoided, as in the case of towns situated on hills, Professor Henrici points out that a curved or zigzag ascent, with alternations of steeper and less steep grades, is far less fatiguing for horses than a straight road, but he suggests that a pretty effect may often be obtained, and the convenience of footpassengers promoted, by carrying a foot-path, perhaps with steps in it, across the loops of the zigzag or curved road. Visitors to Rome, remembering the Scala di Spagna, with S. Trinità de'Monti at the top of it, will see how much could be made, architecturally, of such a disposition. Where public squares or open spaces are to be planned, anything like a hump in the ground is to be avoided even more sedulously than in a street. A park of small dimensions which has a hill in the middle, or which ascends, first steeply and then less steeply, is almost incapable of being made attractive. The best surface is a slight concave curve. With such a formation, the whole extent of the park, with its ornaments, its shrubbery or flowerbeds, and its groups of visitors, is visible from all parts, while the variations of surface give agreeable curves to the lines of gravel-walks or hedges. Where the surface is thus varied, care should be taken not to lay out straight avenues or promenades, or symmetrical plantations, which, when transferred from the plan to the ground, present an appearance very unlike that which they offered on paper. If formal gardening is desired, which may often be the case in small city parks, the ground should be level, or graded to a uniform slope. any case, the character of the surrounding buildings should be kept in mind in planning parks or squares. While an open space adds greatly to the beauty of a public building facing it, the public building adds equally to the attractiveness of the open space, and provision for the two things should be made together. If this is not done, the ground around the square or garden will be taken up for private purposes, and the beauty of the place thrown away, while the great buildings, which should have been placed there, will be crowded into narrow streets, where half their effect is lost. Nearly all our cities present many examples of this want of foresight, as well as of all the other sorts of miscalculation and misapprehension to which Professor Henrici refers, while specimens of streets which have been, even by accident, successful in effect are rare. We shall hope later, in referring to some further observations made by the same eminent authority, to be able to present some examples illustrating the subject.

THEATRES.1 - VIII.

MUNICIPAL THEATRE, AMSTERDAM.



R. JAN SPRINGER is the author of this late addition to the Continental municipal

opera-houses, and by his kind permission the plans of his work form the subject of this article.

The Amsterdam Theatre is built upon piles with arched vaults resting thereon to form the foundations. Over these vaults is formed the ground-floor level which is devoted entirely, in the front part of the house, to the approaches, entrances and vestibules. Although the theatre is a large one, there is simplicity and symmetry about the arrangement of symmetry about the arrangement of the plans, which are now often observed

in modern Continental theatres and which students of theatre-planning would do well to follow. I have laid stress more than once on ning would do well to follow. I have laid stress more than once on the advantages of a symmetrical plan on the score of safety: with duplicated means of escape from each section of the seating, and the exits situated in corresponding positions on either side of the house ready exit is easily arranged. Such a scheme is to be found in the drawings which form the illustrations of this article.

The usual covered carriage-approach is situated in the front of the building, the side or foot-passenger entrances being placed at the angles, an arrangement I have had to describe before. This gives the pedestrians an opportunity of entering the theatre without running the risk of being trampled upon by horses or having to dodge

running the risk of being trampled upon by horses or having to dodge

in and out under their noses.

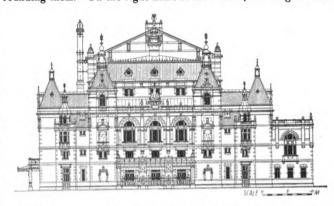
The outer vestibule leads to an inner hall, in which are situated the two ticket-offices; beyond the hall and under the centre of the auditorium a large rotunda is placed. To the right and left of this rotunda are the two grand staircases which lead to the stalls and circle above. Each staircase is designed with two separate flights of steps, the one terminating at the stalls level, the other being continued up to the grand-tier seats above. The plans show that there are also side-entrances to these staircases leading directly from the two side streets. These afford ready means of exit without having to again traverse the rotunda, hall and vestibule to the front of the

In the front angles of the building are the entrances to the second tier of seats and the gallery; and an excellent queue arrangement been made to deliver in the direction of the street, instead of inwards

towards the centre of the building.

Altogether, it must be acknowledged that the approaches to the additorium are on an ample and luxurious scale, occupying as they do, the whole of the ground-level of this part of the building. A notable feature of this plan is the direct means of exit into the open air afforded to members of the orchestra, without having to traverse the mezzanine under the stage, as is usually the case. The orchestra floor is laid over a hollow space formed by an inverted arch: this is done for acoustic reasons, as it adds to the resonance and power of

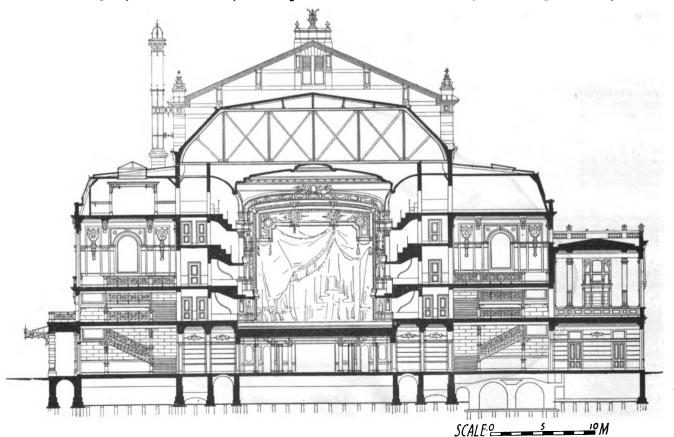
On the first-floor level the seats are arranged as stalls on the area, with a row of private boxes raised on a slightly higher level surrounding them. On the right hand of the "Salle," leading from the rounding them.



grand staircase on that side, is a large refreshment-saloon, while in front over the vestibule is a small foyer and open balcony, the large foyer being placed on the level of the grand tier boxes above.

The lavatory accommodation is one of the happiest features of this well-studied plan, as these rooms are placed in the angles over the gallery entrances and are approached from the main corridors by means of lobbies. They are of ready access from the auditorium, while at the same time they are sufficiently screened in by the manner in which their approach is arranged, and afford a privacy without actually hiding them away from those who want to find them. There is a decency exhibited in this arrangement, which at the same time does not detract from the convenience of these rooms by rendering them inaccessible.

Passing now to the grand tier, it is found that the central feature of the auditorium is the Royal box; a range of smaller private boxes



leads the people past the ticket-office to the separate staircases provided for each tier. For convenience of exit, it appears to me that the staircases would have been more valuable if the last flight had

support this on either side and two rows of stalls are provided in front of them. This is a happy combination of the opera-house and dramatic theatre and makes the building useful for either purpose.

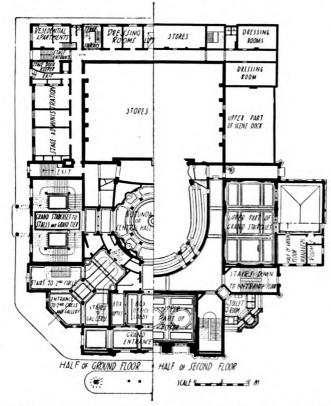
The second tier is planned with three rows of seats and no

private boxes other than two between the main columns supporting

Continued from No. 985, page 56

the roof, of which I shall speak hereafter. The same symmetrical arrangement of planning is repeated on this level, as well as on the gallery tier, where there are most spacious refreshment-rooms, a foyer, and every convenience for the audience, on as large a scale as for those occupying the better parts of the house.

The general scheme of the interior decoration of the "Salle" calls



to mind the Haymarket Theatre, London: two columns, one on either side of the proscenium-boxes, support the proscenium-arch, while towards the back of the "horse-shoe" there are two private while towards the back of the "horse-shoe" there are two private boxes, also marked by a column on each side; from these columns the arches spring which support the ceiling. This arrangement is similar to that which was carried out some years ago at the Haymarket by the London architect, Mr. Charles John Phipps, F. S. A.; its success bears this repetition.

The construction of the tiers is of steel cantilevers, but as the number of rows of seats is limited on even tier these contilevers are years bear.

of rows of seats is limited on every tier, these cantilevers are very short, and there is no special feature in their design to call attention to.

The completeness with which the part of the theatre behind the curtain is carried out can well be un-derstood from the plans themselves. Generally, the principle upon which this portion of the build-ing is designed is that while the ladies are accommodated with dressing-rooms on the one side of the stage and men on the other, perfect symmetry and simplicity of arrangements are maintained, as in the "front" of the house.

There are two stage doors: the one from the street on the right, the other on the left. These lead to a broad corridor which runs round three sides of the stage and in case of fire completely cuts the stage off from all the administrative rooms. The

of scenery without folding or rolling the cloths - a great saving in the wear and tear of the scenery, a great convenience in the quick manipulation of the flats, and a great precaution against fire.

On the ground-floor to the right of the stage are the stage administrative offices, to the left the manager's room, board-room and band-room in direct communication with the orchestra.

Behind the stage are two staircases leading to the dressing-rooms above; in the centre is a lift for luggage and the quick conveyance of the performers from the stage to their dressing-rooms. The caretaker's apartments are situated near one of the stage entrances, and two rooms are given to the "stage-doorkeeper" at the other entrance. This functionary has usually to be contented with a small cupboard-like compartment, wherein he is boxed from early morning till late night, checking in and out all performers, ballet, chorus, stage-hands, etc. — in all, some hundreds; and woe betide him if any unauthorized person finds his way past him into the sacred precincts of stageland. The stage-doorkeeper's facility for remembering faces needs to be phenomenal, considering his long hours and having to be constantly on the alert. His quarters should be comfortable and not a box taken out of a passage, as if an afterthought had revealed to the architect that such a person as a stage-doorkeeper was necessary to the due performance of the routine of theatrical business.

On the stage level are the chief dressing-rooms, offices and scenedocks, while on the floors above are stores, wardrobes, ballet and chorus rooms and dressing-rooms for the less important members of

It will be noticed that the due regard for the safety of the performers has induced Mr. Jan Springer to provide on each floor of dressing-rooms external balconies, with ready access from the rooms, and escape by ladders from the higher balconies to the lower ones. This provision is in addition to the two broad staircases already mentioned.

The sanitary requirements of this part of the house are not over-looked: on each floor, separate accommodation is given for males and females; indeed, the architect has shown to a marked extent his desire to look after the welfare of those whose lives are devoted to

the pleasure of others and of their art.

On the whole, Mr. Jan Springer must be heartily congratulated upon the planning of this addition to the municipal opera-houses of

the Continent.

The treatment of the exterior is somewhat lighter in style, detail and grouping, than one is accustomed to see in the more severe Classic buildings which adorn other Continental cities.

ERNEST A. E. WOODROW.

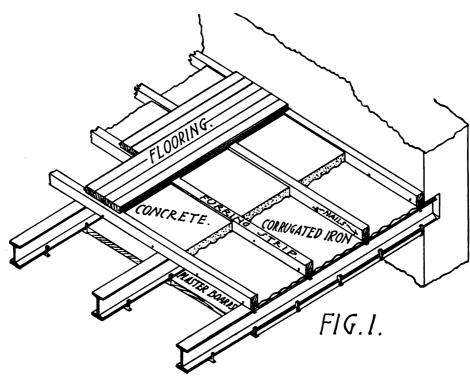
[To be continued.]

A NEW FIREPROOF CONSTRUCTION.

AM now ready to make public the lecture delivered before the local Chapter of Architects on a new fireproof construction. The delay of three years has allowed me plenty of time to change the beginning, the middle and the end of the lecture to make

it accord with late developments in the art of fireproofing.
The old lecture

began, like all lectures on the same subject printed in the American Architect, with a discovery that in imitating the Egyptian in his use of a beam and gir-der, we were fool-ishly using two beams when one would suffice. Some sad experiences have increased my veneration for the practice of the Egyptian, and I am ready to confess that the beam has come to stay, and that vaults and combinations of metallic straps, strings, brackets and meshes with "revolutioniz-ing" concrete sub-stances should be consigned to the category of constructions which may be said to be "interesting," but



tractive froms. The stage is self-curtained by a thick wall, with only such openings in it as are necessary for the due performance of the business of the theatre.

The stage, as the section shows, is very lofty, allowing for the raising in which one should not become interested financially.

Instead, therefore, of offering a saving of beams as the result of abstruse calculation, I revise my system so as to show a surplus

of beams and a saving of floor and ceiling construction. Now that beams are cheap, it is possible for us to recognize the fact that, by setting them two to three feet apart, all we need is a flooring equal to a two-inch plank in strength and tenacity, but formed of incombustible materials and combined with a suspended heat-resisting ceiling. The loss of beam strength due to the diminished depth of this floor is more than offset by the diminished required strength due to the omission of the entire mass of material usually filled-in between beams. Is not the tile arch, after all, a most irrational device when we conceive of the possibilities indicated above? Its use has been developed by artificial and wrong relations of cost of materials, unthinking credence in misleading tests, and ignorance of the behavior of tile in actual fires. Recent fires prove that a fire which will not harm a wire-and-plaster or plaster-board construction will strip plastering off tile wherever it is exposed to heat or water. A severe fire quickly denudes beam flanges and girders and breaks off exposed tile surfaces. At this stage, the fire-department must intervene to protect the beams from damage.

The constructive error is apparent when repairs are made; since, for instance, a ceiling must be suspended over an entire area to get round the difficulty of patching the damaged portions of the tile

In short, we must allow in fireproof constructions, as Mr. Atkinson allows in "mill construction," that it is economy to protect the frame from heat by a separate cheap device easily repaired at spots that may be damaged by intense heat or the efforts of firemen. Mr. Atkinson specifies for this purpose "plastering on wire-lath or dovetailed lath, or plaster-boards, or ceilings of tin, or other suitable metal." The dove-tail lath and sheet-metal I reject as inferior to the other devices, because they permit a wood frame to char and a steel frame to expand, which means an expensive repair that could be avoided. Materials which protect wood will protect steel, but greater care must be exercised so that transmitted heat shall not unduly expand the steel frame the country of the steel frame to the

unduly expand the steel frame, the expansion of steel beginning at a much lower temperature than the charring point of wood.

It will be noted that Mr. Atkinson does not quote tile as a protective device. Why? Because it possesses no advantage in cost or degree of protection that outbalances its disadvantages of weight, difficulty in cutting and fitting, and bad behavior in fires. If used at all where a real fire is to be expected, it must be used hollow, so that when the surface toward the fire flies off, the connecting ribs and remaining surface will shield the frame still. The firemen must be active as well, because an eleven-sixteenths-inch thickness of tile after six minutes' exposure to high heat increases in temperature fifty degrees per minute!

The tile construction is of use simply because there are classes of buildings in which any incombustible floor and partition will remove all former cause of serious fire; anything will answer the purpose that does not feed and convey flame. For other buildings its use should be condemned except as a suspended two-inch hollow-tile ceiling, in which shape other materials surpass it in cheapness, pro-

tection to the frame and cost of repair after a fire.

When we consider how the sensitive steel beam is protected (?) by the close contact of a material getting hot at the rate of fifty degrees per minute, while other materials in the same position and with the same length of exposure would be cool, we must accord a degree of truth to Mr. Atkinson's sarcastic views of our intelligent use of materials. A beam sixteen feet long and one hundred degrees hotter on the bottom than on the top must deflect four inches. If the higher temperature he explied to the whole section inches. If the higher temperature be applied to the whole section at the same time, no deflection, but a harmless expansion, takes place. A hollow space between steel beams is, therefore, a means towards their preservation. Heat from below diffuses in the air-space, and wall ventilating flues will prevent expansion of the air and bring cool air to reduce temperature. The floor above, being more pervious to heat than the ceiling, will absorb and radiate heat as fast as received. The beam can expand but little, and cannot be distorted. The need of thus diffusing transmitted heat may be noted at the cooling-table of rolling-mills, where each beam must be turned until cooled in order to equalize the effects of air-currents which create slight differences in temperature in the glowing beam

For commercial uses the fireproof floor should be hollow and venon metal hangers, countersunk so as to be covered and protected from the heat. Circulation of air should be provided for by a space between beam and plaster-board. This ceiling costs no more than the one advised by Mr. Atkinson for slow-burning construction.

The steel frame is as economical as the wooden frame. It remains

The steel frame is as economical as the wooden trame. It remains only to devise a satisfactory floor equal to a two-inch plank in strength, but composed of incombustible materials. In a floor, heat is of slight import when applied from above: the great need is a floor performing the office of a roof. If we take No. 24 corrugated sheets with one inch up-turned edges and clamp them to the beams and to each other, setting grooved wood furring-strips over the turned-up edges, so that nailing through the sides of these strips nails the whole floor together, we shall have a floor which will drain at the ends of the sheets and stop passage of water elsewhere. Cheap concrete the sheets and stop passage of water elsewhere. Cheap concrete is filled between the strips before the finished floor is laid. Wall gutters and outlets are provided. The water which seeps through the maple floor and the concrete and drips at the ends of the floor sheets may be drained very cheaply by small gutters beneath, lead-

ing to scuppers or flues at the walls. Satisfactory flashing at columns

and pipes may be easily accomplished with this floor.

Mr. Carrère will find in this floor a working platform which requires a minimum of wood, affords a space for pipes and possesses ease of

a minimum of wood, affords a space for pipes and possesses ease of cutting and attachment.

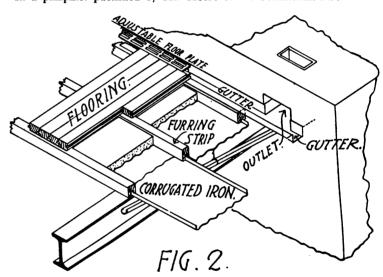
Mr. Moore, of the Continental Insurance Company, will find his suggestion of the use of metal-sheets as a fire and water stop developed into a practical and economical roof. Mr. Atkinson will find some of his principles applied to the steel frame so as to make it superior to the slow-burning construction, even in cheapness; that is, if it is conceded that an incombustible hollow space is free from the objections inherent in the same space surrounded by combustible materials. In view of his late article in the Engineering Magazine, it will not be impertinence on my part to inform Mr. Atkinson that in all but buildings with a small amount of finish and equipment, a wooden frame is a disastrous factor, owing to its shrinkage and deflection. In commercial buildings of the better type, the frame must be treated for dry-rot, or that risk assumed, because tenants insist be treated for dry-rot, or that risk assumed, because tenants insist upon finish of plaster or paint, and the "one rough coat of plaster to avoid dry-rot" is just what they will not accept. The slow-burning building finished to suit merchants, while constructed to suit Mr. Atkinson, is a more expensive building than the one I have described. In warehouses, which require no finish, the steel construction may coat a little more but it is most but then the slight difference. cost a little more, but it is worth more than the slight difference in cost. In mills there may be necessities connected with machinery and shafting that will decide in favor of slow-burning construction. That there is need of sending students abroad to study abandoned, supposedly cheap, but really expensive, methods of combining coal-ashes and plaster, hoop-iron and what-not to make an already detestable construction safe against little fires, may well be doubted.

My acquaintance with approximations of Mr. Atkinson's suppositious European devices is so intimate that I feel justified in assert-

ititious European devices is so intimate, that I feel justified in asserting that one can sink all the money he deems advisable upon them

without adding the expense of a European trip.

In a pamphlet published by Mr. Moore of the Continental Fire



Insurance Company, all these constructions at all applicable to the country are fully described. They have been abandoned in foreign the country are fully described. They have been abandoned in loreign countries for the same reason that they will soon disappear in this country. They are attempts to make a construction safe from fire, which is already very undesirable on other accounts. Progress has avolved a hetter type, superior to the old in all respects. The balance of first cost against the better type has slowly disappeared. Only the old wood-lath type, which Mr. Atkinson so detests, may be said to be temporarily cheap. Any attempts to better it only in-

crease the field for its ravages.

For years after buildings are completed, architects as coroners, and exasperated clients as jurors, hold inquests upon the disintegrating efforts of the wooden frame. The universal verdict is that any form of wooden frame is an evil to be abolished, except possibly Mr. Atkinson's slow-burning construction in the mill, for which it was

designed and for whose needs it is perfectly adapted.

many cases it is real economy to use the present type of fireproof construction at its present cost. Perhaps Mr. Atkinson can be persuaded to look upon the new type, which I respectfully submit to him, as an evidence that "the prosaic study," "the art of building at once safely and inexpensively," is receiving some share of attention from the architectural profession. Any carpenter in any part of the United States can expect this door and with it are or attention from the architectural profession. Any carpenter in any part of the United States can erect this floor, and with it produce a fireproof building. The cost of a house floor, including the beams and ready for one coat of plaster and the finishing floor, ranges from fifteen cents to eighteen cents per square-foot, according to span. The mercantile floor, including the same items, will range from twenty cents to thirty cents per square-foot, according to span, strength and degree of fire and water proofing.

While the devices of this floor are patented, it is a general type and not necessarily the limit of progress in the same direction. I trust it may hold out sufficient hope to enable our travelling student

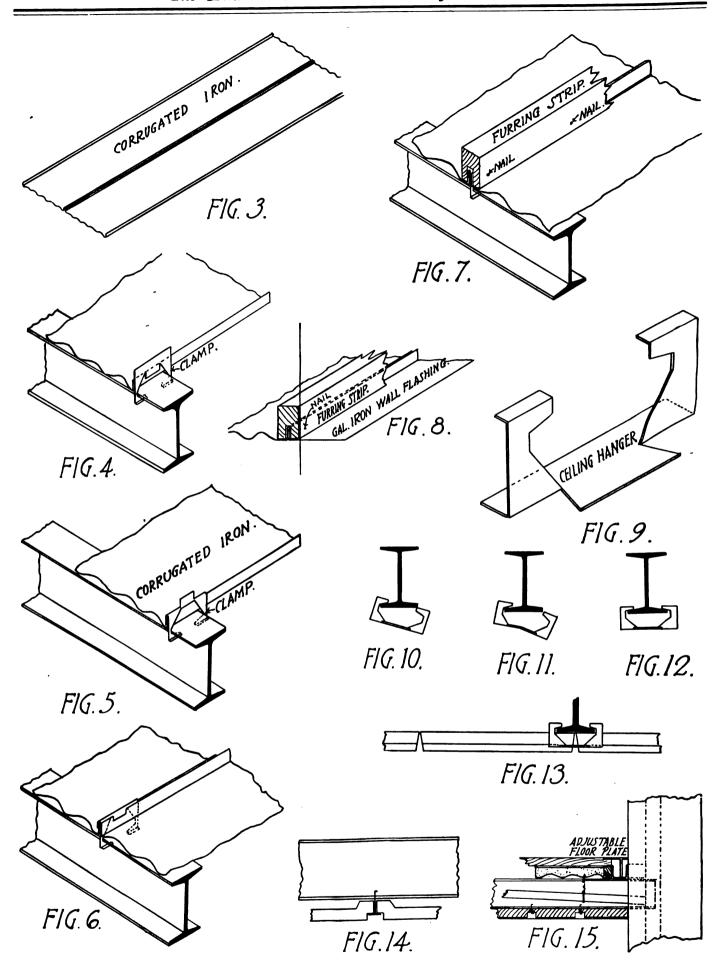


Fig. 1 shows a view of a completed floor and ceiling for ordinary uses, and Figs. 2 and 15 show the variety intended for commercial use where drainage of the

2 and 10 snow the variety intended for commercial use where drainage of the floor is a requisite.

The struts and furring strips and method of attachment to the beams and each other are shown in Figs. 3, 4, 5, 6 and 7. Fig. 8 shows the wall strip and flashing. The clamps are formed of thin galvanized-iron. The sheets range from No. 25 to No. 20 in thickness and are 16" wide by any length up to ten feet.

The strips are common pine, $2'' \times 2\frac{1}{2}''$ section. They may be had, treated for dry-rot, at twenty-five cents per square of floor extra.

Figs. 9, 10, 11 and 12 show the ceiling hanger and method of erection. They are very strong and light, formed of No. 20 galvanized-iron to fit all sizes of

Figs. 13 and 14 show plaster boards laid upon the shelves of the hangers.

to maintain his search for inspiration among the masterpieces of the noblest of arts, confident that the constructors of his own country will furnish him all needed advice in the art of building at once H. B. SEELY. safely and inexpensively.

Notes. — This floor is the old type, but composed of incombustible materials throughout, and it restores to fireproof construction the chief labor working platform and constructive advantages missing in tile arch devices. A scientific use of the construction involves the treatment of

devices. A scientific use of the construction involves the treatment of the sheet and concrete as a roofing device primarily, and supporting device in case of severe fire. The strip, in combination with the flanges of the sheet, supplies the element of stiffness for flooring purposes.

As in wood-framing, a fixed heavy parallel load should be taken directly by a special beam beneath, and uniformity of span conduces to economy in cutting floor and ceiling materials. Tables of strengths of sheets will soon be published. For the present they may be calculated according to the formula in the "Carnegie Pocket Companion," page 160. page 160.

THEATRE FIRE STATISTICS.1



may be well to begin by giving briefly a few statistics regarding theatre fires and their causes. Here we at once encounter much difficulty in gathering and presenting accurate and reliable figures and facts.

There are numerous cases in which a fire breaking out

There are numerous cases in which a fire breaking out in a theatre, on the stage, in the auditorium, or elsewhere, is at once extinguished by the stage-hands, or by the firemen on duty in the building. Many cases of this kind never become known to the public or to the press, and no accurate record is kept of them. In other instances again, blind fire-alarms are followed by a panic and often by loss of life. When a fire in a theatre breaks out during the night and destroys the building, the cause of the same often forever afterwards remains a mystery. Distinction must be often forever afterwards remains a mystery. Distinction must be made between occasional outbreaks of fire which are subdued before it can spread, and such fires as completely destroy the building. The data given below refer only to theatres which are entirely

Those fires, which break out during a performance when the building is crowded with people, are naturally the ones of greatest interest to us. If accompanied, as they unfortunately often are, with loss of life, the number of persons killed and wounded is difficult to ascertain with absolute accuracy, as many perish in the building who are not missed by friends or relatives. The tendency in these cases is usually for the press to exaggerate the number of in these cases is usually, for the press, to exaggerate the number of victims, whereas, on the other hand, the theatre officials or the municipality often try to keep the figures below the actual number. The curious mistake is sometimes made of counting both the dead and the wounded in the same figure of victims, obtaining thereby

and the wounded in the same figure of victims, obtaining thereby largely increased and incorrect figures.

We are principally indebted for theatre-fire statistics to the works of Herr August Foelsch, a German civil engineer, recently deceased; of Herr Franz Gilardone, a retired German fireman; of Captain Shaw, of the London Fire-Brigade; to Dr. Choquet, physician to a French Life Insurance Company, and to the labors and reports of John C. Hexamer, Esq., a civil engineer and insurance surveyor, of Philadelphia. Their figures and statistics do not, by any means, agree, and it is difficult to account for the discrepancies. Taking the work of Herr Foelsch as, on the whole, the most complete and reliable guide, although it is not brought quite up most complete and reliable guide, although it is not brought quite up to date, being published in 1878, with a supplement issued in 1882, shortly after the Vienna Ring Theatre fire, we find a list of 516 theatres enumerated which, up to and including the year 1877, were completely destroyed by fire.2

Out of these, 460 theatres were burned in 100 years. The list contains of theatres in the principal cities the following:

	-	
London 31	Boston 11	Venice 6
Paris 29	Glasgow 11	Baltimore 6
New York 3 26	Cincinnati 9	Cologne 5
San Francisco 21	New Orleans 8	Edinburgh 4
Philadelphia 17	Bordeaux 7	•

Among the 516 theatres we find -

37 theatres which were burned twice.

8 "" " three times.
4 " " four times.
1 theatre (the Bowery Theatre in New York) which was burned five times; also one theatre in Spain which burned down seven times.

Regarding the average life of theatres, the records are confined to 252 theatres, and show that -

70	"	**	"	in the first	5 years	after	opening
38	44	"	44	between 6-1	0 "	44	" "
45	66	44	"	" 11-2	0 "	66	44
27	66	"	66	" 21-3		44	**
12	44	**	66	" 31-4		46	"
20	"	44	44	" 41-5		"	44
17	"	66	66	" 51-6		"	44
7	"	44	"	" 61-8		44	"
8	44	44	66	" 81-1		"	44
3	66	66	"	after over 10		exis	tence.

¹Extract from a paper by Mr. Wm. Paul Gerhard, read before the National Association of Fire Engineers.

²This figure, in the supplemental edition of 1882 to the work, was corrected to

Out of a total of 252 theatres, 70, or more than one-fourth of them, are destroyed before they reach an age of five years

Theatres, therefore, as a rule, do not attain an old age, and Herr Foelsch figures the average age of these 252 theatres as 22³/₄ years. For the United States, the average life of a theatre is said to be only from eleven to thirteen years, but it should be remarked that these figures were reached some years ago, before the more strict theatre laws of some of our large cities (New York and Boston, and quite recently Brooklyn and Philadelphia) were enacted.

Recent analytical studies of the question have elicited the fact that there are two periods in the life of a theatre-building, when it is most endangered or subject to destruction by fire, namely, one from the time of its construction up to and including the first five years, and the second period, after the theatre has been opened from forty to fifty years. This may be explained first, by the fact that in a new theatre the safety appliances, the arrangements for lighting, the scene-hoisting devices, the fire-protection appliances, are rarely in perfect working-order, and the theatre employes have not as yet become accustomed to handling them and are likewise

unfamiliar with the rules of management.

The second period of renewed danger is explained by the fact that after the number of years quoted above, much of the apparatus in a theatre has become worn out or useless, and is not always kept in repair or replaced by new apparatus, and it may also be attributed to the fact that after the lapse of many years the theatre management and inspection are apt to be less strict, and that often interior alterations are made which unfavorably affect the safety of the building.

From the middle of the last century to the present day, nineteen theatres, on the average, have been destroyed annually by fire. For those who are interested in more detailed figures, I quote the statistics gathered by Herr Foelsch and Dr. Choquet, the latter's figures being placed in brackets.

```
In the years 1751-1760 there
                                                                                                             4 8 9 [11] 11 [13] 13 [15] 17 16 [18] 25 [30] 43 [54] 69 [76] 99 [103] 181 [169] [174]
                                         1751-1760
1761-1770
1771-1780
1781-1790
1791-1800
1801-1810
1811-1820
1821-1830
1831-1840
1841-1850
1851-1840
1861-1870
1861-1870
1871-1880
1881-1885
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Taking each year from 1871 we have the following numbers:

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(up to November.)
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The fire-loss represented by these figures reaches many million of

dollars' worth of property.

The hour of the day in which theatre fires started is of considerable interest. Out of 289 fires

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56 theatres burned during the day between 7 A. M. and the afternoon, or. 19.4%
15 " one hour before beginning of performance, or. 5.2%
36 " during performance, or. 12.4%
66 " within two hours after close of performance, or. 23.9%
113 " during the night and before 7 A. M. next morning, or. 39.1%
```

Later on, when the records of 373 theatre fires were available, Herr Foelsch found this percentage to remain nearly the same, viz: 19.9; 5.6; 11.6; 22.6 and 40.3% respectively. It will be seen from these figures that the greatest danger from fire to a theatre is during the two hours following a performance, and not during the performance, as would naturally be supposed. The reason for this is, partly, that during the performance a greater watchfulness exists as regards open lights, the sources of heat, and the other usual as regards open lights, the sources of heat, and the other usual causes of fire, and partly because many fires while actually started during a performance, for instance, by carelessness in the use of fireworks, or by the use of firearms, do not break out at once, but smolder for a while in the inflammable scenery and woodwork of the stage, and break out during the hours following the performance. The risk from fire immediately before the performance and while the audience is admitted, is found to be three times as great as during other hours of the day which is explained by the fact that at during other hours of the day, which is explained by the fact that at this time the gas flames are lit which illuminate the scenery.

this time the gas flames are lit which illuminate the scenery.

Theatres are, therefore, safest in the day-time; the danger is increased threefold during preparations before the performance because of lighting up, etc.; it is reduced during the performance on account of the careful inspection and greater watchfulness on the stage, but is still two times as large as during the day; the danger reaches a maximum (7 times the day risk) during the two hours after the close of the performance, and it remains during the night

² Since 1821, up to the present day, 29 theatres have burned down in New York

nearly 31 times as great as during the day (sparks from fireworks or pistol wads may remain glowing for hours after the performance). The theatre fires which break out during the performance are often accompanied with loss of life of both spectators and actors, and are therefore of particular, though sad interest to us. The life

and are therefore of particular, though sad interest to us. The life of firemen is often greatly endangered at theatre fires at all hours, and the list of instances where firemen have been killed while engaged in their duty in trying to save burning theatres is quite large.

Herr Foelsch describes in detail 36 theatre fires between 1770 and 1877, which began during the performance, and out of this number not less than six were accompanied by appalling loss of life. From 1877 to 1889 six other deplorable theatre calamities have occurred. In the twelve years from 1876 to 1888, not less than 1,600 people have been killed in the six well-known theatre disasters of Brooklyn, Nice, Vienna, Paris, Exeter and Oporto, nearly all of the victims being dead within ten minutes from the time when the flames and the smoke from the stage reached the auditorium and the galleries.

the galleries.

Dr. Choquet, in his statistics, enumerates a total of 732 theatres destroyed by fire from 1751 to 1885, with a total number of victims, i. e., both killed and wounded, of 6,573. This list includes fires where firemen lost their lives in the performance of their duty. Since the beginning of this century 536 theatre fires occurred, and from 4,500 to 5,000 persons have been killed or wounded.

Here are in detail, in periods of ten years, some of the figures of victims of theatre-fire calamities given by Dr. Choquet:

```
10 victims.
     In the years 1751-1760, 10
" 1761-1770, 4
" " 1771-1780, 154
                                                                                                                      (Amsterdam, 1772, 25 d.;
Saragossa, 1778, 77 d., 52 w.)
                                         1781-1790, 21
1791-1800, 1,010
1801-1810, 37
1811-1820, 85
1821-1830, 105
1831-1840, 813
1841-1850, 2,114
                                                                                                                      (Capo d'Istria, 1794, 1,000 v.)
                                                                                                                      (Richmond, Va., 1811, 72 v.)
(Philadelphia, 1829, 97 v.)
(St. Petersburg, 1836, 800 v.)
(Canton, 1845, 1670 v.;
Carlsruhe, 1847, 63 d., 203 w.)
Quebec, 1846, 200 v.)
(Livorno, 1857, 43 d., 134 w.)
                                                                                                                     (Ahmednuggur, 1878, 40 v.;
Brooklyn, 1876, 283 v.;
Shanghal, 1871, 120 v.;
Sacramento, 1876, 110 v.)
(Nice, 1881, 70 v.;
Richmond, 1885, 100 v.;
Vienna, 1881, 450 v.)
                                      1881-1885. 628
In the year 1887, Paris, 150 "
" " 1888, Oporto, 140 "
" " 1887, Exeter, 200 "
" " 1892, Philadelphia, Central Theatre, several dead and wounded
```

Before proceeding to study the causes of theatre fires, I will give a brief list of twelve prominent theatre-fire calamities of this century, the horrors of many of which are probably fresh in your mind.

LIST OF TWELVE PROMINENT THEATRE-FIRE CALAMITIES OF THIS CENTURY

the horrors of many of which are probably fresh in your mind.

LIST OF TWELVE PROMINENT THEATRE-FIRE CALAMITIES OF THIS CENTURY

1. Theatre in Richmond, Va. — Date: December 26, 1811. Time of fire: During the last act of the evening performance. Number of people in audience: About 800. Cause of fire: Careless hoisting of a stage chandelier with lighted candles, whereby a border became ignited. Panic, jam at exits. Number of victims: Seventy persons killed, many injured. No data available as to location, plan, construction and equipment.

2. Lehman Theatre and Circus at St. Petersburg, Russia. — Date: February 14. 1836. Time of fire: During the afternoon performance, at 4 o'clock. Number of people in audience unknown. Cause of fire: Stage lamp, hung too high, ignited the stage roof. Panic, jam at exits. Number of victims: About 800 persons killed. Location: In an open square. Construction: Temporary wooden structure. Exits obstructed by the panic-stricken crowd.

3. Royal Theatre, at Quebec, Canada. — Date: June 12, 1846. Time of fire not stated. Number of people in audience unknown. Cause of fire: The upsetting of a lamp on the stage ignited a wing. Number of persons killed: About 100. Construction: Of combustible material. Chief defects: Insufficient exits, narrow stairs; one wooden staircase broke from overweight of the crowd, and thereby obstructed one of the exit doors.

4. Grand Ducal Theatre, at Carlsruhe, Baden, Germany. — Date: February 28, 1847. Time of fire: Just before beginning of evening performance. Number of people in audience: About 2,000. Cause of fire: The careless lighting up of the gas-lights in the Grand-Ducal box ignited the draperies. Number of victims: Sixty-three persons dead and 200 injured. Location: Entirely free on open square. Construction: Wooden interior, the four exits ordinarily effected the emptying of the house in six minutes. Chief defects: The main entrance to the theatre was bricked up (1). Of the four exits ordinarily effected the emptying of the bause in six minutes. Chi

any other fire-extinguishing appliances available. Auxiliary exit doors for the gallery kept closed. Only one staircase for the gallery. Stage overcowded with secency. Lofts over the auditorium filled with much infiammable scenic material. Proseenium of wood. During fire the gas was turned off in the street.

7. Theatre binicipal, at Nice, Italy.—Date: March 23, 1881. Time of fire: At 83 in the evening, immediately before the beginning of the performance. Number of people in audience not known. Cause of fire: In lighting the border-lights, an explosion of gas took place, igniting at once the scenic decorations. Number of persons killed: From 150 to 200, nearly all from the upper gallery. Location: In an open square. Construction: Substantial. Plan and arrangement: Fairly good. Chief defects: No fireproof curtain, no oil-lamps in corridors and exits. Auxiliary exit door from gallery to the safety stairs could not be found on account of arkness, the gas-lights having been extinguished. The lower part of gallery stairs steep and with winding-steps. The crit doors of the property of a stairs of the stair of the stair of the property of the substantial of the stair of the property of the safety of the professions. Number of people in the audience: About 1800. Cause of fire: The careless lighting of the border-lights by means of an alcohol torch (the sunal electric disablight apparatus being out of order) [guind a hanging border. Number of persons killed: At least 450, many from the upper gallery. Location: Standing free on three sides. Construction: Substantial, but stairways bad. Plan and arrangement defective. Chief defects iron fire-proof curtain could only be lowered from the rigging loft, and could not be lowered at the time of the fire. Special crit doors locked, keys and locks roaty. Gas-lights extinguished, oil-lamps provided in corridors, but not lighted. The exits insufficient, and obstructed by the jam. This fire was very similar to the Brocklyn Theatre fire. The fire caught in each office. Act of fire: A

appliances on stage; stage overloaded with scenery; insufficient and badly arranged exits.

12. Theatre at Oporto, Portugal. — Date: March 31, 1888. Cause of fire: A rope in the rigging-loft came too near the border-lights and caught fire, which quickly spread. A panic broke out, and the safety exits being closed, a jam resulted in the corridors. Many persons jumped to the street from the windows, others followed on top of those lying wounded and killed in the street. Sailors and marine soldiers in the upper gallery are said to have used their knives to kill persons standing in their way. Number of victims: 240 persons. Chief defects: Theatre built entirely of wood; all stage gas-lights were open and unprotected lights. No safety-appliances of any kind.

It may be noted that in nearly all the catastrophes briefly described, fire broke out high up in the inflammable scenery, near the borders, and was caused by gas-lights coming into contact with the combustible scenery.

Besides the twelve theatre fires briefly mentioned, in which alone about 3,000 people lost their lives, there is a large list of other fires, full of horrors, about which, however, the details are meagre.

full of horrors, about which, however, the details are meagre.

Among these I mention the fire in a theatre at Canton, China, on May 25, 1845, where 1,670 persons are said to have perished; the fire of the theatre at Whampos, China, in 1853, caused by fireworks, and killing 30 persons; the theatre at Tientsin, China, burned in May, 1872, with 600 persons dead; the fire at a theatre in Ahmednuggur, East India, on May 11, 1878, when 40 persons were killed; the fire of the Gayety Theatre, in Milwaukee, on November 15, 1869, caused by the upsetting of a kerosene-lamp on the stage, whereby 2 persons were burned to death, and about 30 injured; the fire in a theatre at Tschernigow, Russia, on December 24, 1882, caused by a gas-metre explosion, and resulting in a panic, wherein several people were killed and 100 injured; the theatre fire at Dervio, Como, Italy, on June 25, 1883, where 47 persons lost their lives; and the fire at the Central Theatre, in Philadelphia, Pa., in 1892, causing the death of several persons. causing the death of several persons.

Again, there are numerous instances of large loss of life during panies in public halls and places of assembly, of which I will mention only the panic at the Victoria Hall, in Sunderland, England, where of 2,000 children present, 183 were crushed and trampled to death, and the panic in a circus at Richmond, (State?) in 1885, whereby

100 persons were killed.

CONSTRUCTION.1 - XXVII.

MILITARY CONSTRUCTIONS

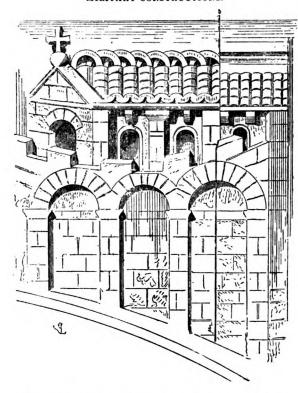


Fig. 141. From a Bas-relief, Notre Dame la Grande, Poitiers, France.

OMPARING the military constructions of the beginning of the Middle Ages and those of the Romans, there is to be noted only a somewhat decreased perfection in the use of materials and the a somewhat decreased perfection in the use of materials and the execution; the processes are the same; the curtain-walls and the towers are merely composed of masses of rubble-work, protected with a facing of small stones either rough or sparely dressed. It seems that the Normans were the first to introduce certain improvements in military works unknown before their time, and which from the eleventh century on give to these constructions a marked superiority over those which existed in Eastern Europe. The most notable among these improvements was the rapidity with which they erected their strongholds. William the Conqueror covered England and a part of Normandy in a very few years with strongholds built of masonry executed with perfect solidity which is attested by the great number of them still standing.

It is to be supposed that the Normans established on Western soil the methods in use by the Romans, that is to say, requisitions for

It is to be supposed that the Normans established on Western soil the methods in use by the Romans, that is to say, requisitions for building their fortresses and this is, indeed, in a completely subjugated country, the best method of raising massive structures requiring only large amounts of materials and many hands. There is to be found, in short, in the primitive military constructions of the Normans no trace of art; everything is sacrificed to the prime need of defense. Buildings of this sort furnish no material for analysis; they have no interest for us, except from the defensive point-of-view. It is scarcely before the end of the twelfth century that we find special methods of construction applied to defensive works, forming an art by itself. For masses of rubble-work offering equal and continuous resistance, are substituted supports united by discharging arches, and thus forming in the curtain-walls as well as in the towers

arches, and thus forming in the curtain-walls as well as in the towers some parts more resistant than others, each independent of the other, so as to avoid the fall of large portions of the masonry if they should be undermined. It is about this time also that they attached great importance to the site of military works, that constructors chose rocky soils difficult to undermine, and that they frequently benched out the rock in order to obtain indestructible escarpments, for during the grand sieges undertaken at this epoch, notably by Philip Augustus, sapping and mining were the means most often employed for overthrowing walls.

One of the bas-reliefs which decorate the western façade of Notre-Dameds-Grande at Poitiers, which dates from the commence.

One of the bas-reliefs which decorate the western façade of Notre-Dame-la-Grande at Poitiers, which dates from the commencement of the twelfth century, already shows us city walls, composed of discharging-arches carried by slightly projecting exterior buttresses (141). But it is not necessary to stop too long over these representations of monuments which do not always conform to

reality. The discharging-arches when they exist habitually appear on the interior of the walls to carry the chemin de ronde and masked by the exterior facing. Common sense would, in fact, indicate that discharging-arches on the exterior would mark to besiegers the point where they should begin to undermine, and that

¹ From the "Dictionnaire raisonné de l'Architecture Française," by M. Viollet-le-Duc, Government Architect, Inspector-General of Diocesan Edifices, trans-lated by George Martin Huss, Architect. Continued from No. 989, page 104.

the projection of the buttresses would hide the advance guard. above examples should therefore be considered as the reverse of the

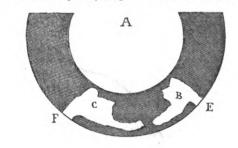
above examples should therefore be considered as the reverse of the wall used on account of necessities of sculptural decoration.

The intelligence which we see displayed by the French constructors toward the end of the twelfth century in religious and civil edifices is also found in military edifices; they endeavor to replace the passive forces of Roman construction by active forces; but military architecture is concerned not alone with existing exterior agencies and the natural laws of gravity; it has to offer resistance to the destructive hands of men.

destructive hands of men.

The logic of the artists who develop the art of architecture in the Middle Ages and raise it out of the Romanesque rut, is rigorous; we have had occasion to demonstrate this to our readers in the first two parts of this article. It will be understood that this logical and truthful spirit found a fine chance to exercise itself in the construction of military edifices, where everything must be sacrificed to the necessity of defense. Sapping and mining carried out by means of a system of shoring, which was set on fire, being the most ordinary principle of attack in the twelfth century, it was necessary to oppose this system by a principle capable of rendering futile the works of the assailants. If, then, we construct a tower on the plan A (142). and if the miners succeed in attacking it, in two adjacent points of the exterior face, and make the two cavities B C shoring them with small struts, when they set these struts on fire, all the portion E F of the tower will fall outside and the work will be destroyed; but if, using the same cubic quantity of materials and covering the same superficies, we take the trouble to build in place of a solid wall a series of niches included between interior buttresses as plan Gindicates, there is an even chance that the miner will happen upon a void instead of a solid, and then his plan of burning struts will produce no results; but if he hits upon a solid wall this will offer him a greater thickness than in the plan A, and his work will be longer and more difficult; in addition, the recesses H allow of countermining, if he works below these niches. In addition, the niches H themselves can be shored on the inside, so as to make the fall of a part of the can be shored on the inside, so as to make the fall of a part of the tower impossible, even admitting that the excavations of the mine have been made at I, and at K underneath the piers. Thus as early as the end of the twelfth century with a cubical quantity of materials equal to that previously employed and even a less quantity, the military constructors had succeeded in giving a much stronger foundation to their works. In addition, the constructors buried in the thickness of the walls tough pieces of wood bolted together with iron so as to encircle their towers at different levels. The principle was excellent but the method very bad; for these pieces of wood completely deprived of air, rapidly dried and rotted. Later they noticed the rapid destruction of wood so used and replaced it by a system of anchors made of iron cramps built-in between two courses. There is one observation which might occur to any one and which

system of anchors made of iron cramps built-in between two courses. There is one observation which might occur to any one and which is not devoid of interest. The mortars generally employed during the twelfth century and the beginning of the thirteenth, in churches and most religious constructions are bad, wanting in body, imperfectly mixed and frequently even the sand itself gives out and seems to have been replaced by stone dust; while the mortars employed in military constructions at this epoch, as well as before and after, are excellent and are frequently as good as Roman mortars; the same



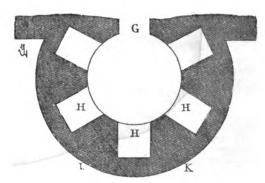


Fig. 142.

may be said of materials. The stones employed in the fortifications are of a superior quality, well chosen and worked in large masses; they emphasize, by contrast, the great negligence or painful economy in the greater part of religious constructions.

Evidently the lay noblemen when they built fortresses had kept the Roman method of requisitions and apportionments which the abbots and bishops were unable or unwilling to maintain. It would seem that the Norman seigneurs were the first to reorganize the building system employed by the Romans, and their example has been followed in all the northern and western provinces. Enthusiasm produces great things, but it is of short duration. A sentiment of reaction against barbarism caused the erection of abbey churches and the vast constructions surrounding them; a desire for liberty and an awakening of faith brought about the building of cathedrals; but these moments of effervescence past, abbots and bishops found but these moments of effervescence past, abbots and bisnops round only a cold devotion left; hence negligence or scamping in the doing of work. With the lay nobility it could not be thus; the peasants were not asked for devoutness, they were required to do regular tasks under rigid supervision. This method was certainly the better one for the regular prosecution of considerable undertakings. So we ought not to be surprised at the hatred which has been transmitted among us from generation to generation against. has been transmitted among us from generation to generation against the feudal fortresses and the affection for their cathedrals which the people have retained through these hundreds of years. At the end of the last century it is true that many churches were destroyed, more particularly conventual churches — because these belonged to feudal establishments; but not many cathedrals have been destroyed, while all the châteaux, without exception, have been devastated — many, even, had been ruined under Louis XIII and Louis XIV. So far as we constructors are concerned, we have only to state here facts, from which each one can draw conclusions in accordance with his own manner of looking at things; we are obliged to admit that from the point-of-view of workmanship, there are found in the fortresses of the Middle Ages, uniformity and sureness of execution, a regulated progression and an attention which are wanting in many of our religious edifices.

In the construction of churches there may be noticed interrup-tions, boggling, frequent modifications in the original projects, which are to be explained by lack of money, more or less flagging zeal of bishops, canons or abbots, new ideas which crowded into the brains of those who ordered and paid for the work. All that is benevolently laid to the account of the ignorance of the master-workman, the inefficiency of their methods.²

[To be continued.]



ARCHITECTURAL LEAGUE OF NEW YORK. - REPORT ON THE BEAUX - ARTS COMPETITION, NO. 1. - SUBJECT, "A SMALL THEATRE FOR CANTATAS.

THE following awards were made:

9			
NAME OF COMPETITOR.	ATELIER.	ORDER	OF MERIT
F. R. MANN	Mass. Inst. of Tech	Awarde	ed a Medal.
KARL RICHARDSON	(Masqueray-Chambers) (Sketch-Club of N. Y)	First	Mention.
H. H. THORNDYKE	Mass. Inst. of Tech	**	"
WM. BERGER	Masqueray-Chambers	Second	"
LESTER A. CRAMER	(Masqueray-Chambers) Sketch-Club of N. Y	**	"
W. B. FAVILLE	Mass. Inst. of Tech	**	44
FULLERTON & MACCAFERTY	Earnest Flagg	"	**
H. B. PENNELL	Boston Arch'l Club	44	44
W. J. V. RANDOLPH	Howard & Cauldwell	"	66
EMERY ROTH	Ernest Flagg		"
F. WHITING	Ernest Flagg	44	44
M. M. FUERSTMAN	Phila, T-Square Club	Third	"
ARTHUR GILKES	Ernest Flagg		**
NELSON GOODYEAR	Masqueray-Chambers	**	**
MISS FAY KELLOGG	Carrère & Hastings	. "	**
ALBERT KELSEY	Phila. T-Square Club	"	**
RICHARD L. LEO	Columbia College	44	44
HABERT RIPLEY	Boston Arch'l Club	44	66
"SIGMA"	Phil. T-Square Club	"	"

Eighteen other drawings were presented which received no award,

making a total of thirty-seven competitors.

The medal offered by the Society of Beaux-Arts Architects for the best design for a small theatre for cantatas and light plays was awarded to Mr. F. R. Mann, of the Massachusetts Institute of Technology, in consideration of the special excellence of his plan and section. section.

The elevation of this design, while well composed and rendered, is somewhat too heavy and out of character for a small building demanding rather lightness and grace than monumental repose. The plan, however, is excellent, both in arrangement and indication,

and the section is well drawn and in character.

First Mentions were awarded to Mr. Karl Richardson, pupil of Messrs. Masqueray & Chambers, and to Mr. H. H. Thorndyke, of the Massachusetts Institute of Technology. The former of these

¹ In Normandy there existed during the Middle Ages a class of peasants called by the general name of Bordiers. These Bordiers were compelled to do the hardest sorts of work—among others—those connected with the building, such as the transport of materials, terracing, etc.; in other words they were masons' helpers. (See Etud. suc la condit. de la classe agric. en Normandie au moyen âge, par Léop. Delisle, 1851, p. 15, 20, 79, 83, and notes p. 709.)

² For instance, it is always impressed upon us that such a cathedral was two centuries in building, without taking into account that out of these two hundred years they actually worked only ten or twenty years.

is good, alike in plan and in the general character of the elevation. The plan is somewhat lacking in charm and interest, though logical and well drawn.

Mr. Thorndyke's plan is especially brilliant and well characterized, the elevation being less happy in these respects.

INTER-CLUB COMPETITION.

NAME OF COMPETITOR.	ATELIER.	ORDER OF MERIT.					
KARL RICHARDSON	Sketch-Club of N. Y	First	Mention.				
H. B. PENNELL	Boston Arch'l Club	Second	"				
ALBERT KELSEY	T-Square Club of Phila.	Third	**				
CLAUDE FAYEFTE BRAGDON	Rochester Arch'l Club.	Fourth	**				
T. Laist	San Francisco Sketch-		**				

Among the designs representing the Sketch-Club of New York, the Architectural Club of Boston, the T-Square Club of Philadelphia, the Rochester Architectural Club and the Sketch-Club of San Francisco, the first place was accorded to the design submitted by Mr. Karl Richardson, representing the New York Sketch-Club, which has been placed until the statement of th by Mr. Karl Richardson, representing the New York Sketch-Club, which has been already noticed as receiving a First Mention in the general competition. The prize offered by the Inter-Club League will, therefore, be awarded to this design. The second place was given to the design submitted by H. B. Pennell, representing the Architectural Club of Boston, on account of the clever treatment of the plan, which, however, was out of scale and larger than the programme demanded. The detail of this design is noticeable for its excellence, but the elevation is a little too severe to be in good character for a problem of this sort.

excellence, but the elevation is a little too severe to be in good character for a problem of this sort.

The design submitted by Mr. Albert Kelsey, of the T-Square Club of Philadelphia was placed third. The plan in this case is too complicated. The elevation, good in idea and general character, is insufficiently studied; the detail is good.

Eight Second Mentions were accorded to several designs showing good work; some of which presented noticeably good details, as in one submitted by Mr. W. B. Faville, of the Massachusetts Institute of Technology, and that of Mr. F. Whiting, pupil of Mr. Flagg.

Eight Third Mentions were awarded to designs showing praise-worthy effort and promise of mature work in the future.

As a whole, the drawings sent in showed a gratifying degree of a warded as thusias m and ability on the part of the

excellence, and a marked enthusiasm and ability on the part of the contestants.

New programmes will be issued immediately for the succeeding

competitions.

The authors of the drawings which have received a medal, the two First Mentions, and the eight Second Mentions, are requested to allow these drawings to be exhibited at the Architectural-League Annual Exhibition and to send their consent in writing, immediately upon receipt of this notice, to Mr. John M. Carrere, 44 Broadway, New York.

> Respectfully submitted by JOHN M. CARRÈRE, Chairman. JOHN G. HOWARD. ERNEST FLAGG.

For the Jury.

Committee on Education.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement

CHURCH OF ST. MARTIN IN THE FIELDS, WISSAHICKON HEIGHTS, PHILADELPHIA, PA. MESSRS. G. W. & W. D. HEWITT, ARCHI-TECTS, PHILADELPHIA, PA.

[Gelatine Print issued with International and Imperial Editions only.]

THE 71ST REGIMENT ARMORY N. G., S. N. Y., AT PARK AVENUE AND / 34TH STREET, N. Y. CITY. MR. J. R. THOMAS, ARCHITECT, NEW

ALTHOUGH this building is known as the 71st Regiment Armory, it is also the home of the Second Battery and the Signal Corps, and the headquarters of the First Brigade. It is built of rock-faced granite from Mount Hagen, Me., the basement being laid in courses, and above in random-range ashler with red mortar joints. While it has not the defensive strength of a fort to resist modern artillery, it is strong enough to withstand the attack of any ordinary unorganized street mob, and could be easily defended against such an enemy. The Second Battery has its quarters in what is the basement on the Thirty-third-Street side of the building, but what is really the first floor on account of the difference in the grades of the streets. There is on this floor a drill-room, 150 feet by nearly 200 feet, without any supporting columns to interfere with the movements of the Battery. Immediately above this battery drill-room is the drill-room of the 71st Regiment, nearly 200 feet square. This arrangement led to the solving of a somewhat unusual problem. To have put up supports below would have interfered seriously with the value of the artillery drill-room: without such supports the ordinary drilling of the regiment of infantry above it is strong enough to withstand the attack of any ordinary unorgan-

would have created so much vibration, that usual methods of construction would have been inadequate. The architect conceived the struction would have been inadequate. idea of making the ceiling of the artillery-room, which is the floor of the infantry-room, so strong that its dead weight should preponder-ate any possible living weight. On any ordinary bridge, troops in passing over are required to break step, because the cadence of men in regular motion creates a most destructive vibration. To obviate this, arched wrought-iron trusses were designed, between the spans of which are rolled-iron beams with double brick arches between, of which are rolled-iron beams with double brick arches between, and then filled on top with concrete of sufficient depth to make the dead load something over three hundred pounds per square foot. Over this concrete are the wooden sleepers and floor of the drill-room. With this method of constructior, the live load is so small in comparison with the dead weight that any movement, however rhythmical and provocative of vibration, is inconsiderable. There are the usual executive offices in the basement for the Battery, and also for the Regiment on the first and mezzanine and a portion of the second story, and for the Brigade headquarters on the second floor. The Signal Corps will also have quarters in the building, and from the turrets and the balconies surrounding them the members will have opportunity for drill and practice. Entirely the members will have opportunity for drill and practice. Entirely around the regimental drill-room is a gallery from which visitors will see the manœuvres. The ten company-rooms are suspended from the roof-trusses across two sides of the drill-room, and above the main galleries, each room having a gallery or balcony of its own. The cost of the building and equipment, exclusive of the land, was about \$450,000.

HOUSE AT PRIDE'S CROSSING, BEVERLY, MASS. MESSRS. LONG-FELLOW, ALDEN & HARLOW, ARCHITECTS, BOSTON, MASS.

SHELTER AND LOOK-OUT AT CASTLE ISLAND, BOSTON, MASS. MR. E. M. WHEELWRIGHT, CITY ARCHITECT, BOSTON, MASS.

THE CALIFORNIA STATE BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MR. A. PAGE BROWN, ARCHITECT, SAN

COMPETITIVE DESIGN FOR A PRIMARY SCHOOL-HOUSE, WOBURN, MASS. MR. A. H. GOULD, ARCHITECT, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

CHOIR-SCREEN IN THE CHURCH OF ST. LUKE, GERMANTOWN, PA. MESSRS. COPE & STEWARDSON, ARCHITECTS, PHILADEL-PHIA, PA. [Gelatine Print.]

DOORWAY OF STA. ENGRACIA, SARAGOSSA, SPAIN. THIS plate is copied from Teknisk Tidskrift.

DOOR IN THE FÜRSTENZIMMER, VELTHURNS. THIS plate is copied from Architektonische Rundschau.

A CHÂLET IN THE CANTON OF BERNE. This plate is copied from the Schweizerische Bauzeitung.

MONUMENTS TO M. PAMARD AT AVIGNON, FRANCE, BY M. GUIMINEL, ARCHITECT, AND TO M. H. MAZE, AT VIROFLAY, FRANCE, BY M. H. GUILLAUME, ARCHITECT.

THESE subjects are copied from La Construction Moderne.

BARODA AND CENTRAL INDIA OFFICES, BOMBAY, INDIA. THIS plate is copied from Indian Engineering.

THE NEW PARLIAMENT BUILDING, BERLIN, GERMANY. HERR PROFESSOR PAUL WALLOT, ARCHITECT.

This plate is copied from the Deutsche Bauzeitung.

MEMORIAL TO C. W. COPE, R. A. MR. J. W. SIMPSON, ARCHITECT. This plate is copied from the Building News.

THE ENTRANCE FRONT OF THE BISHOPSGATE INSTITUTE, LONDON, ENG. MR. C. HARRISON TOWNSEND, ARCHITECT.

This plate is copied from The Builder.

QUEEN'S HALL, LANGHAM PLACE, W., LONDON, ENG. MR. T. E. KNIGHTLEY, ARCHITECT

COMPETITIVE DESIGN FOR ST. AIDAN'S CHURCH, WALTON-LE-DALE, ENG. MESSRS. EDEN & WILLIAMS, ARCHITECTS.

THE illustrations of this design represent alternative schemes one with a single arcade (shown in the interior perspective) and the other with the usual arrangement of nave and aisles. It is demonstrable that the piers of a single central arcade "obstruct the view

of altar and pulpit" far less than do those placed in the ordinary way, though this is seldom an advantage. The design was exhibited this year at the Royal Academy.

INTERIOR OF THE SAME.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; do they hold themselves responsible for opinions expressed by their correspondents.]

THE UNION LEAGUE CLUB-HOUSE, CHICAGO: A COR-RECTION.

CHICAGO, ILL., December 4, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

To the Editors of the American Grounds.

Dear Sirs, — In your advertisement of Urban Club-houses, Chicago, you have Union League: Cobb & Frost, architects. This is an error. The Union Club is by Cobb & Frost. The Union League by W. L. B. Jenney.

Very respectfully yours,

W. L. B. Jenney.

To the Editors of the American Architect: -

Dear Sirs, — The "Promptorium Parvulorum," Shakespeare, and the early records of Boston, Mass., prove conclusively that "jetty," denoting projection, is Tudor English. A modern importation from France, therefore, was not necessary. But if that importation has taken place, where is the evidence? Surely, the origin and the migration of words may be traced like the origin and migration of persons. Neither persons nor words float mysteriously; their travels can be traced and it is the business of etymology to trave them. can be traced, and it is the business of etymology to trace them, as

well as to abstain from guesses.

Of engineering I know nothing. But when I am told that our Of engineering I know nothing. But when I am told that our forefathers knew nothing about jetties meaning long piers projecting into the sea, I demur, though anxious to honor Mr. Clark. I thought that ancient Tyre, Alexandria, Syracuse, Athens and Rome built jetties to secure safe anchorage for their shipping, and that the founders of Massachusetts knew their classics quite as well as we do. Nor were they afraid of large engineering. In 1673, the men of Boston began the great pier, or jetty, twenty-two hundred feet long and "20 foote broad at ye topp," which gave us the inner harbor, and surpassed all similar works previously undertaken in England. All the maps of early Boston show this huge work, which the decline of the Province allowed to go to decay. But even the Province created Long Wharf, which extended some two thousand feet into deep water. Boston built more wharves in the seventeenth century than in the nineteenth, when we change them into parks.

than in the nineteenth, when we change them into parks.

Undoubtedly Boston went through a period of decline, which lasted from about 1720 to 1780; but from 1630 to 1720 Boston was rich, opulent, ambitious and engaged in vast engineering. It built the best ships afloat, it had more wharves than to-day, and it per-fected some hydraulic engineering that entitles the Tudor era of Boston to the admiration of this age. As I am a mere student of language, or a student of mere English, I cannot undertake to discuss the engineering and architecture of Boston from 1630 to 1720; but the language in which the great enterprises of the time were discussed is within my province. I repeat that jetty is Tudor English, that the founders of Boston spoke the Tudor English of English, that the founders of Boston spoke the Tudor English of Shakespeare and the Bible, and that they were great engineers, because they used the language of great engineers and executed works not approached by the country they had left. They did great things, and had names for them; and I do not see why we should import in the nineteenth century what the fathers planted here in the seventeenth. American history still owes a debt to the founders of Massachusetts, who were indifferent theologians, but good men of affairs, good merchants and good engineers.

C. W. Ernst.

[OUR correspondent asks us to suppress this if it seems to us likely to provoke an etymological discussion, of which there are too many useless ones. It seems to us that this explanation has the same sort of historico-architectural flavor and interest about it that led us to publish the original communication, and it is now published on that account and not as part of a controversy over the derivation of words. — Eds. American Architect.]



BOSTON, MASS.—Exhibition of Millet's "Sower" and other Paintings loaned by Quincy A. Shaw, also, Ancient Chinese Buddhist Paintings, the Works of Adolf Menzel, and Drawings by John Trumbull: at the Museum of Fine Arts.

Eighth Exhibition of the Water-color Club: at J. Eastman Chase's 7 Hamilton Place closes December 15

7 Hamilton Place, closes December 15.

Exhibition of Pictures of New England Life by New England Painters: at Jordan, Marsh & Co.'s, opened November 27.

Dielman's "Marriage of Dr. Le Baron," and Water colors by William Adam: at Williams & Everett's, 190 Boylston St., opened November

Exhibition of Paintings by J. H. Hatfield: at the Boston Art Club,

CHICAGO, ILL. — Seventh Annual Exhibition of American Oil-paintings and Sculpture: at the Art Institute, October 29 to December 17.
Water-color Exhibition: at F. Keppel & Co.'s, 1 Van Buren Street.

CLEVELAND, O. — Eighteenth Annual Exhibition of the Cleveland Art Club: December 17 to 22.

New York, N. Y. — Thirteenth Annual Autumn Exhibition of the National Academy of Design: opens December 10, closes January 5.

Loan Exhibition: at the Metropolitan Museum of Art, New North

Loan Exhibition: at the Metropolitan Museum of Art, New North Wing opened November 5.

Fifth Annual Exhibition of the New York Water-color Club: at the Galleries of the American Fine Arts Society, 215 West 57th Street, December 1 to 22.

Zschille Collection of Arms and Armor: at Tiffany & Co.'s, Union

Exhibition of Historical Book-bindings: at the Grolier Club, December 6 to 27, also, Etchings and Drawings by Whistler, until December

Pastels after Celebrated Originals in European Galleries, by J. Wells Champney: at Knoedler's, 170 Fifth Ave., closes December 23.

Pictures by Adolph Artz: at William Macbeth's, 237 Fifth Ave.,
December 1 to 22.

"Little Girl Pictures" by Miss Maria Brooks, and Water-colors by Dutch Artists: at H. Wunderlich & Co.'s, 868 Broadway, opened Navamber 24

Exhibition of Du Maurier's Original Drawings for "Trilby": at the Avery Galleries, 368 Fifth Ave., December 3 to 15, also, Paintings by A. C. Howland: December 4 to 22.

NORWICH, CONN. - Exhibition of Book-bindings: at the Slater Memorial Hall, closes December 20.

PHILADELPHIA, PA. — Sixth Annual Exhibition of the Art Club of Philadelphia: opens November 19, closes December 16.

Sixty-fourth Annual Exhibition of the Pennsylvania Academy of Fine Arts: opens December 17, closes February 23.



A COLLECTION OF BRICKS.—I once described in this paper an old gentleman, of my casual acquaintance, who had a mania for collecting relics of catastrophes. If a house tumbled down or blew up and burnt, if a boiler exploded, or anything else terrible happened around town, he gathered in some souvenir in the way of a brick or a chunk of wood or a scrap of metal —it didn't matter what, in fact — and labelled it and added it to his museum. Now another New Yorker turns up whose tastes run in a somewhat similar direction. He is Andrew Saul, Superintendent of the New York Merchant Police and member of the Maritime Exchange, and he has presented the museum of the Exchange with a collection of sixteen venerable brickbats, respectively derived from old St. George's Church, which was built in 1748, on Chapel Hill, now Beekman Street, at the corner of Van Cliff Street, since called Cliff Street; from Fraunce's Tavern, corner of Broad and Pearl Streets, where Washington bade farewell to his officers and delivered his immortal address in 1783; from the Walton House, which stood until recently at 320 Pearl Street, where the Bank of New York, the first bank established in this city was started; from the Middle Dutch Church, which was built in 1729, and stood in Nassau Street, between Cedar and Liberty Streets, where the Mutual Life Insurance building now stands, and which served the Government many years as the Post-Office; from the house at 82 and 84 Jane Street, in which Alexander Hamilton died; from the Washington Hotel, which stood on the site of the Washington Building, at the foot of Broadway. The hotel was for a time the residence of Washington when he was President, and was later known as the Kennedy Mansion. Several British generals occupied it successively during the Revolution. Nathaniel Prime lived there also, and it was there that he committed suicide. Memories of Dr. Talmage's ill-fated Tabernacle are evoked by three bricks, each from one of his burned edifices. There is also a brick from the Brooklyn Theatre, whi

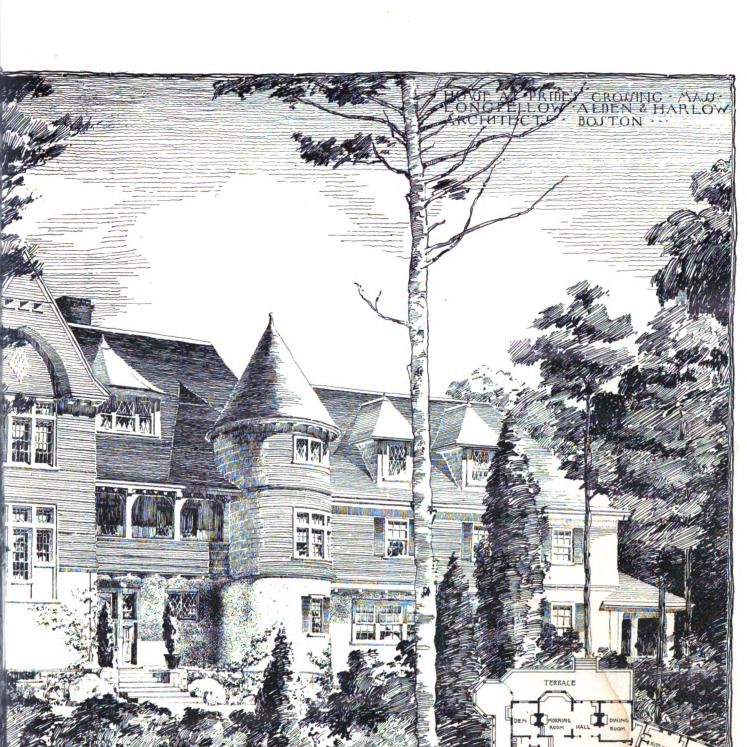
That is Talmage's Tabernacle, in Brooklyn. One can get all the bricks from that church he wants. I have another curious brick. It is one that formed part of an old Dutch well, which was discovered while workmen were digging for the foundations of the new Produce Exchange. It is shaped like a keystone, and is double the size of an ordinary brick." Mr. Saul's office, at 67 South Street, is a veritable curiosity shop. He has several pieces of timber from the "Morning Star," a ship that was sunk off the Battery a century ago. The planks are of oak, hard as iron, and are studded with oak nails. He has several sections of the old wooden water-pipes which supplied New Yorkers with water before iron pipes were used. He also has many mementoes of river pirates, who flourished along the water-fronts thirty and forty years ago. He has an armory of daggers, knives, pistols, sandbags, and other piratical weapons. Among these are several from China and Japan. One is a Japanese dagger, with an ornamental black handle, and a long, keen, finely-tempered blade. Another is a Chinese razor, which looks like an oyster-knife. He has also a flendish Chinese garrote. It is made of leather, and is studded with little projections of short black wire. The wires are dipped in deadly poison, and the garotter encircles the neck of his victim with the garrote. The wire stubs penetrate the skin, the poison gets into the flesh, and in a few minutes the victim is dead. A gruesome curiosity in Mr. Saul's collection is a long, tightly-braided string of black hair. "That is a Chinese pirate's queue," Mr. Saul explained. "An American ship was attacked at Hong Kong by pirates one night, and the ship's carpenter caught one of them by his queue and clipped it off close to his crown. That ended that pirate's career. Without his queue he would be an outcast among his own people, and he jumped into the water and drowned himself. There was nothing else for him to do."—The Collector.

Collector.

WILLIAM II AND HERR WALLOT.—A decision of the Emperor William has, a correspondent says, caused great sensation and is much commented upon in the Berlin art world. His majesty has bestowed the large gold medal upon Mme. Vilma Parlaghi, the painter, although the jury of the exhibition did not propose her. Further, he has annulled the decision of the committee of artists to bestow this medal upon Professor Wallot, the architect of the new House of Parliament. All attempts to induce his majesty to confirm the award are said to have been in vain. Professor Wallot enjoys a great reputation among the German artists, and it might still be remembered what a sensation was caused two years ago when the Emperor, speaking in Rome of the new German House of Parliament, said it was the acme of tastelessness. In another affair the difference of opinion between the Emperor and the committee of Berlin artists came also to expression. Mme. Vilma Parlaghi wished to exhibit her works in the Berlin Academy, but room was refused her. Her pictures will now be exhibited in the Royal National gallery by order of the Emperor. On the other hand, German artists are resenting the Emperor William's censorship of art. The club to which all artists of reputation in Berlin belong has by a unanimous vote conferred honorary membership upon Herr Wallot, the architect of the new German House of Parliament. This honor is evidently meant to be a sort of set-off against the action of the Emperor at Rome spoke in disparaging terms of Herr Wallot's work. Shortly afterward, the club of German artists at Rome elected the architect an honorary member. There are other differences between his majesty and the artists. There exists an official committee to promote the cultivation of art. Its members are men who have made a name in the art world. This committee passed a resolution asking the Prussian Diet for a contribution of a considerable amount from public funds for the purchase of objects of art for the Schack gallery at Munich; Berlin att lif

Condition of the Building-trades in London.—The threatened struggle in the building-trades of London seems to be developing, with what future results no one can foresee. Singularly enough, it has begun with the same firm as that which finally led to the lock-out in 1859, Messrs. Trollope and Sons. It is somewhat curious to observe that no reference is made to the dispute in the November number of the Amalgamated Society of Carpenters' and Joiners' report. So far, indeed, the whole matter seems to have originated with, and has been carried on by, the body called the Building-Trades Federation, a committee consisting of members of the various building-trades unions. The dispute originated, it is alleged, over the discharge of two unionists, both bricklayers, one originally discharged, and then the other, when it was found that he, too, was a unionist. The original strike extended to six jobs of the same firm, some three hundred men being out. Messrs. Trollope state that there has been no difficulty in filling their places, not a single society man having been employed since the strike began. So far, the whole matter is little better than a storm in a teapot. But the result appears to be likely to be far more serious. It seems to be drifting into a struggle in which the agreement of 1892 will have to be revised, or at least reconsidered. It is said that the employers contemplate a withdrawal of the agreement hitherto existing, unless some amendments are introduced. The following appear to be the proposed amendments: (1) No distinction is to be made on any job between union, non-union, or independent workmen; (2) one week's notice to be given of intention to strike; and (3) sub-letting not to be objected to if the conditions as to wages and hours of labor are complied with. — Engineering. CONDITION OF THE BUILDING-TRADES IN LONDON. -The threatened

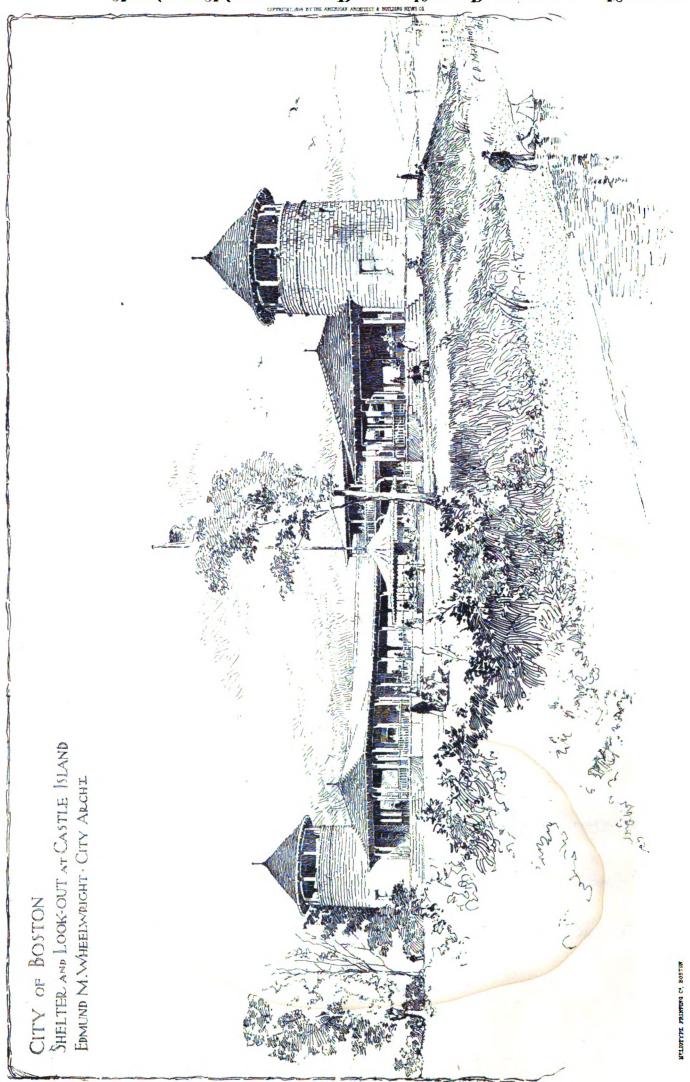




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MERICAN ARCHITECT AND BUILDING NEWS, DEG.15, 1894. 20.990.



MMERICAN ARCHITECT AND BUILDING NEWS. DEG 15. 1394. **R**o. 990. OMPETITIVE DESIGN—
PRIMARY SCHOOL.
Woburn, Mass.
M.Gould, Archit. Boston, Mass.

CALIFORNIA STATE BUILDING.
WORLD'S FAIR, CHICAGO, ILLINOIS.
A. PAGE BROWN, Architect.

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No. 991.

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Summary:—

The Test Suit over the Competition for the New York Cityhall.—Explosion of a Heating Boiler in a School-house.—

Death of Count Ferdinand de Lesseps.—The Ladies and the Calhoun Monument, at Charleston, S. C.—The Proposed East River Bridge.—The Convention of the National Federation of Labors, at Denver.

Specification for Structural Steel Work.

Theatres.—IX: Criterion Theatre, London.

Letter from Baltimore.

The Gibbon Commemoration.

The Horses of Apollo.

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THE HORSES OF APPLIES.

CONSTRUCTION.—XXVIII

ILLUSTRATIONS:—

Entrance Front of the Herald Building, New York, N. Y.—

Accepted Design for the Baltimore County Court-house, Baltimore, Md.—Premiated Design for the Same.—Two Competitive Designs for the Same.—Italian Capitals.—

Staircase Turret of the Château, Châteaudun, France.—Detail of the Same.—The Upper Town and the Château, Loches, France.—Apollo and the Nymphs in the Bosquet d'Apollon, in the Park, at Versailles, France.

Additional: Main Staircase in the Building of the Metropolitan Life Insurance Company, No. 1 Madison Avenue, New York, N. Y.—The Horses of Apollo, Bas-relief on the former Ilôtel de Rohan, Paris, France.—The Sphinx.—The Civp Bank, Ludgate Hill, London, Eng.—The Alliance Assurance Offices, Pall Mall, London, Eng.—The Alliance Assurance Offices, Pall Mall, London, Eng.—

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T is so difficult to overcome a fixed habit, that there is good reason for requesting our subscribers to take particular heed this year, in filling out their checks for next year's subscription, to make the payee accord with the corporation's title as expressed in the subscription bill. A little care in this respect will go a long way to minimize the trouble which will naturally fall upon the former publishers and ourselves.

THE suit of Messrs. Audsley and Audsley against the City of New York, for services in making competitive drawings for the new City-hall, has been brought up in the United States Circuit Court, and the Corporation Counsel has filed the answer of the City to the suit. In substance, the answer pleads two defences. In the first, it says that the architects rendered no service, and that the City-hall Commissioners are ready to return the plans as soon as a demand is made for them. In the second, it says that the Commissioners never refused, as the petition alleges, to make a decision with regard to the competing plans, but that it was prevented from carrying out its agreement by the action of the Legislature in passing a bill prohibiting the removal of the old City-hall, and, in consequence, preventing the erection of a new one on its site.

TE always regard it as highly discourteous to discuss questions pending before a court, in advance of the consideration of them by the court itself; but it will not, we hope, be amiss to suggest, for the benefit of future promoters of competitions, that the position taken in the last defence, that, after the architects have done their work, in accordance with the Commissioner's invitation, the latter are under no obligation to pay for it if the Legislature steps in to prevent carrying the plans into execution, is not a very strong one. We do not remember that any provision was inserted in the circular of invitation to architects, to the effect that the promised compensation should not be paid if the Legislature should make it inconvenient or impossible to erect the building represented in the designs, and we do not know how, in any other way, a condition that the payment of their promised compensation should be contingent on the action of the Legislature could be saddled upon the architects. The Legislature has not forbidden the city to pay the architects what it promised to pay them. Even if the Legislature should pass such a statute, it would be void, as impairing the obligation of the contract entered into by the architects and the city, so that we cannot see how any act of the Legislature could affect the question at issue, under the contract as it exists. In the other defence, that the architects have rendered no service, we

suppose that there is concealed some technical point which is not visible to a layman's eye, for the idea that an architect who, in response to an invitation from a man to make competitive plans for his house, sends him plans made in accordance with his programme of conditions, renders him no service, is somewhat startling to the ordinary mind.

VERY few weeks, some glaring instance is reported of the reckless stupidity and meanness with which school authorities trifle with the lives of children. If half the crimes against decency and common-sense were perpetrated against grown people that are every day committed against the most precious part of the community, indictments for manslaughter would fill the dockets of the courts; but the children are helpless; they do not know what they are entitled to, and they have neither courage nor disposition to complain, and, as a reward for their modest patience, their lives and health are sacrificed without mercy. One of the worst cases of criminal neglect of this sort yet reported occurred in a Massachusetts town not long ago. On a mild afternoon, three or four weeks ago, a terrific explosion occurred in a school-house, in which two hundred children were busy over their work. The floor of the first-story room over the heating apparatus was thrown upward, but, fortunately, settled back again on its supports, instead of falling into the cellar, so that, of the children who occupied the room, only a few were slightly injured. That indefatigable friend of school-children, Chief Wade, of the Massachusetts State Police, immediately sent an inspector to ascertain the cause of the explosion, and the report of the inspector, Mr. Hawley, is interesting reading for parents.

TCCORDING to this report, the school-building was heated 1 by an ancient square boiler, of cast-iron plates, varying in thickness from half an inch to barely a quarter of an inch, not stayed in any way, and furnished with a safety-valve an inch and a half in diameter, connected with the boiler by a three-quarters-inch pipe. The value of this charming contrivance had been already proved by an experience of the janitor, who left his fire one day with the draughts on, and found, when he came back, the safety-valve, which had been set to blow off at seven pounds, wide open, while the boiler-pressure, as shown by the gauge, stood at twenty pounds. On the day of the explosion, this same janitor, although the weather was mild, built a big fire of anthracite, shut the fire-box door, left the automatic damper open, and went off to look after another school-house, which was also under his charge. When he left the building, the gauge showed four pounds pressure; but, as the inspector says, it is natural to suppose, and the evidence of the wreck clearly indicates, that, the radiators being shut off, and the heat from the fire constantly increasing, the pressure rose until the boiler gave way, the miserable little safety-valve being totally inadequate to relieve the strain. This story would be bad enough, but Mr. Hawley incidentally reveals worse things. Instead of an inadequate safety-valve, he says that in many Massachusetts school-houses, heated by steam, there is no safety-valve at all. The statute relating to steam-boilers requires that a fusible plug shall be put in every boiler, which will melt when the water in the boiler runs so low as to expose it to the fire; but Mr. Hawley finds that even this is often omitted, the boiler consisting simply of a shell, the pressure in which is controlled, apparently, solely by Divine Providence.

N the death of Count Ferdinand de Lesseps, the world loses a very conspicuous, if not very illustrious figure. Neither as an engineer nor as a financier did he ever show even mediocre ability, and he died as a criminal in the custody of the courts; yet long after his sentence for fraud has been forgotten, his name will be honored as that of a man whose untiring energy, enthusiasm and amiability served to carry to completion undertakings which no one else, probably, could have brought to a successful issue. His fame will rest principally on the scheme for the cutting of the Suez Canal, which he appears to have conceived more than sixty years ago, when he was consul at Alexandria, but was not able to carry out until 1854, when, being again in Egypt, as a guest of Mehemet Saïd, he spoke of his project to Saïd Pasha. The latter requested him to draw up a detailed statement of his plan, and, two years later, the matter had gone so far that a concession

was granted by the Viceroy of Egypt. The next step was to secure capital for the undertaking, and for this it was necessary to satisfy engineers of its feasibility, which was not an easy task. In 1859, however, a company was organized, and soon after, the work of excavation was begun. In 1863, on the death of the Viceroy of Egypt, the Sultan of Turkey made claims upon the Canal, which were finally adjusted by the Emperor of the French as arbitrator, and, in 1865, when de Lesseps was sixty years old, small steamboats were enabled to pass from the Mediterranean to the Red Sea. Four years later, the Canal was formally opened to commerce. For some years, de Lesseps was perhaps the most prominent subject in Europe, and his name was undoubtedly used by men younger and more crafty than himself to cover schemes of which he knew nothing. In 1881, when de Lesseps was seventy-six years old, the Universal Oceanic Panama Canal Company was formed, with his name in the most conspicuous place in the list of officers. This Company was supposed to have been formed to carry out a plan which he had devised for cutting through the Isthmus of Panama, but it is quite unlikely that he had ever formed any definite plan of the sort. In fact, as he himself told the members of the American Society of Civil Engineers, when he visited this country, he was not an engineer, but a financier, as he called himself, or, as we should say, a promoter. A promoter he certainly was, and one of extraordinary eloquence and ability; but it suited the men who intended to use him for their own purposes to represent him as a consummate engineer, whose success with the Suez Canal had been one of engineering skill.

THEN the work began on the Panama Canal, it was found that the engineering problems involved had practically not been considered at all, and, rather than confess this fact to the stockholders, the honest managers of the enterprise allowed the money which came into their hands to be squandered in useless experiments, while the dishonest ones filled their pockets with the funds so ineffectually guarded. The scandalous history of the enterprise is too fresh in the minds of our readers to need repetition, and we presume that most of them have already come to the conclusion, which seems to be shared by the French public, that the old man whose name was used to attract subscribers to the enterprise knew very little of what was going on about him. However, the French are very stern in their dealings with dishonesty, and even ignorance of what has been done under his name will not altogether excuse a man from responsibility for it; so it is not surprising that, in the end, he was found guilty of participation in the frauds which had ruined so many of his countrymen. The sentence passed upon him and his son was, however, reversed later, and he never really knew that he had been judicially condemned.

THE ladies of South Carolina are having an expensive experience in the matter of the Calbana rience in the matter of the Calhoun monument in Charles-Some forty years ago, when the memory of the great Nullifier was greener than it is now, and dollars were probably more plentiful in South Carolina than they have been since his doctrines were put in practice, the women of his native State undertook to raise money to erect a monument to Calhoun. Some seventy-five thousand dollars had been raised, and invested in United States bonds, when Calhoun's disciples conceived the idea of extirpating the United States flag from South Carolina by means of powder and ball. This attempt was persisted in, with incidents which need not here be related, until the flag was forcibly replaced by Sherman's army. On the approach of the Federal forces, Mrs. Snowden, the treasurer of the monument fund, sewed the bonds into her clothes, and escaped from the city. The occurrences which followed in South Carolina were unfavorable to monumentbuilding, and it was not until 1887 that a statue of an armchair, with a tall gentleman standing beside it, was erected in Charleston at a cost of forty-four thousand dollars, and paid for with a part of the funds which Mrs. Snowden had taken care of. Although the statue was designed and executed in Rome, the monument was never quite satisfactory to the surviving subscribers to the fund, or to the people of Charleston, and, not long ago, the resolution was taken to pull it down, break up the bronze and erect a new monument, with a new statue on it. Messrs. Renwick, Aspinwall & Renwick, of New York, were selected as the architects, and Mr. J. Massey Rhind, of New York, was chosen in competition as the sculptor.

The base of the old monument will be retained, but, in place of the block with an arm-chair on it, a column and pedestal will be erected, bearing at the top a colossal figure of the great South Carolinian. Enough of the original fund still remains to pay the cost of changing the monument, and its dedication, which, it is hoped, may take place in the autumn of 1895, will be observed with special ceremonies.

HE Long Island Railroad Company has already received proposals from the bridge builden proposals from the bridge-builders for the erection of its great cantilever bridge over the East River, by which it is to reach its new terminus in the City of New York. The bridge is to cover the distance from the Long Island to the New York shore in three spans, the middle one of which is a land span, extending across Blackwell's Island, one pier standing on each edge of the island. The span over Blackwell's Island measures six hundred and thirteen feet in length, while the two water-spans are each eight hundred and forty-six feet in length. The height of the roadway above flood tide is one hundred and thirty-five feet, the same as that of the Brooklyn Suspension Bridge, but the railroad company's bridge is to be a sort of hybrid between a continuous girder and a cantilever construction. The system adopted, which seems to have been due to the consulting engineer, Mr. Charles M. Jacobs, is admirably adapted to the circumstances. Blackwell's Island, which is a ledge of solid rock, affords an excellent foundation for the two great piers of the middle span. The distance between these piers being comparatively small, while sufficient opportunity can be found for erecting false works, it is easy to cover this span with an enormous girder, which is much more readily extended out over the water-span, as a cantilever, than is the case where the cantilever, for the sake of balancing it, must be extended simultaneously each way from one pier. pier at each shore end carries a small cantilever girder of the usual type, extending in each direction. One projecting end of this cantilever extends inland, and connects with the approach work, while the other projects over the water, toward the cantilever which projects from Blackwell's Island, the usual intermediate girder being hung between them. Simple and sensible as this disposition is, the execution of the scheme will involve the employment of a vast amount of metal, the weight of the steel necessary being estimated at nearly forty thousand tons. The connections are to be made with pins, the largest of which are eighteen inches in diameter, and weigh three tons each. The enormous scale of the work in general may be inferred from the fact that the main girder across Blackwell's Island is one hundred and twenty feet high, from the top of the piers to the surface of the upper chord. The terminal station in New York will cover an entire block, between Second and Third Avenues. The tracks, in order to enter it, cross the tracks of the Second Avenue Elevated Railway, but at an elevation of twenty-five feet above them, so that, while no traffic will be interfered with, the Long Island trains will connect closely with both the Second and Third Avenue elevated lines. The importance of this direct connection to the Long Island road, and to the development of Long Island itself, is almost incalculable. No other railway entering New York possesses anything like such facilities for transferring passengers to all parts of the city, and it seems hardly too much to say that this connection alone will build up on the Long Island Railroad a vast suburban district, such as New York greatly needs.

THE Convention of the National Federation of Labor at Denver appears to have been attended with the usua amenities. Hardly had the Convention been called to order, when a member informed the assemblage that he had proofs that the officers of the Federation "sold" their position and influence for the sake of private gain. An uproar followed, but the production of specific charges appears to have been happily averted, and sufficient order was restored to make it possible to hold an election, which resulted in the defeat of President Gompers, and the election of McBride in his place. The malcontents being appeased by this victory, peace reigned until another member happened to object to the present administration of affairs. He was immediately denounced as a "scurrilous whelp," and attempts were made to put him out of the room. Again, however, the attention of the combatants was skilfully diverted to the Knights of Labor, who were not there to reply, and, after freeing their minds at the expense of the rival organization, the delegates dispersed.

SPECIFICATION FOR STRUCTURAL STEEL WORK.

enormous increase in the employment of steel for commercial buildings, which has come about within the past few years, has found architects to a certain extent unprepared for its use, and in many cases has forced them to turn the details over to engineers, especially in such cases as have involved the use of many tons of metal

in the shape of large spans or of numerous stories. Whatever may be the final attitude taken by the public in regard to the advisability of the excessively tall structures which have multiplied so rapidly in the various large cities, the use of steel, and to a very large extent the skeleton construction as well, has come to stay. The architect is accordingly obliged to, at least in a very large degree, be familiar with steel construction.

It may almost be accepted as an axiom, that anything which tends to reduce the bother and personal care required of an architect in connection with merely practical details will leave him freer to give his more undivided attention to the architecture as such. Consequently, any system which reduces the architect's work in connection with the designing of structural steel-work is worth considering.

The common, and at first glance the most obvious method of designing structural steel-work in connection with a building is for the architect to prepare scale-drawings, showing the detail in every portion of the work, with all sections, connections, rivets, joints, etc., clearly indicated, so that when the drawings are submitted to the contractors for estimates there will be no room for independent variations, but each builder will figure upon exactly the same thing. At first thought, also, this is the better and the fairer way. experience of the writer, however, seems to show that results may sometimes be accomplished with far less work.

In preparing the specification and plans for the rebuilding of Tremont Temple in Boston, considerable study was expended upon the sections of steel columns to be employed, and upon the exact forms of girders which would be most desirable. The architects were visited by agents representing all the different makes of wrought columns in the market series and the different makes of wrought columns in the market series and the different makes of wrought columns in the market series and the different makes of wrought columns in the market series and the different makes of wrought columns in the market series and the different makes of wrought columns in the different m in the market, and it soon became manifest that a specification which limited the bidding to any particular shape would also correspond-ingly limit the number of bidders and might not secure to the owners of the property the lowest figure for the steel-work. Furthermore, the facilities for working metal by the different companies are such, that what might be the cheapest form of manufacture for one con-cern would not be the cheapest for another. As it was desirable to obtain the lowest market-price for structural steel-work which would accomplish a certain result, the plans and specifications were accordingly prepared as follows:

Framing-plans were made showing the beams and locating girders and columns. The sizes of beams were marked on the plans. No sizes, however, were given for either built girders or columns. In the case of the former the spans were indicated, likewise the total loads and the extreme permissible breadth and depth. Diagrams were also given, showing the loads in each story on each column, together with the outside dimensions which the columns could occupy. The specithe outside dimensions which the columns could occupy. The specification provided that the steel throughout was to be inspected in the usual manner at the expense of the general contractor from the melt to the cars. The steel was required to stand at least 50,000 pounds per square-inch tension with 35,000 pounds elastic limit, and the contractors were given liberty to proportion the built girders in any way they saw fit, provided the indicated loads were properly supported. The contractor was required to submit strain-sheets for all girders joints and connections as well as copies of all show-drawgirders, joints and connections, as well as copies of all shop-drawings, which were to be approved before the work was executed. In regard to the columns, the specifications provided that they might be of Z-bar or any other marketable type, or compounded of channels, angles and plates, but must be proportioned to safely support the load for which they were figured, the maximum strain upon the metal not exceeding six tons per square inch for a length equal to ninety radii of gyration. Strain-sheets for these columns were to be made satisfactory to the architects by the contractor, and all joints and connections proportioned to the floor-loads. In addition, the specification contained the usual clauses in regard to riveting, the quality of the metal, the style of framing, unit resistances, etc.

When this specification was submitted to the builders it gave rise

to a certain amount of adverse criticism. In some cases the builders asserted that the specification allowed the steel contractor to do just what he pleased and that the work was not sufficiently detailed to enable close figures to be obtained. The fact, however, that in the final bids the figures for ironwork varied by less than one per cent on a contract running up over \$100,000, is ample proof that such form of specification does not give a great latitude to the bidders. On the contrary, it is extremely doubtful if the bidding would have been any closer, or even as close, had all the joints and connections been detailed in advance and each contractor been obliged to bid upon a definite set of plans.

After the strain-sheets had been submitted by the contractor, these were gone over independently by the architects and by an expert engineer, and thoroughly revised, such corrections being made as were necessary. From time to time also, the shop-drawings were submitted for approval. In this way, the architects were relieved of a great deal of unnecessary work, while at the same time an absolute control was maintained over the construction in all its

It may be said in this connection that the writer has yet to find a steel firm which is satisfied with the drawings which an architect prepares for the structural work. In nearly every case the manu-facturers prefer to make their own shop-drawings, and if an architect goes to the trouble of preparing details of the steel work any further than are necessary to give dimensions, heights of stories, spacing of beams, etc., his labor is practically thrown away, for such drawings are immediately re-made so as to be in accordance with the usage of the particular manufacturer who has the work in hand.

The same is true, to a certain extent, regarding the larger and more thoroughly equipped building-firms, most of whom have draughtsmen of their own constantly employed in revising the architect's drawings and calculations; and from the wide range of practical experience which is peculiarly the builder's inheritance, he is often enabled to make a very considerable saving in the construction of a building without in the slightest degree affecting its entire stability or compliance with building laws, while, under similar circumstances, the architect might be inclined to err so largely on the side of safety as to use a great deal more steel-work than would be necessary. large building was erected some time since involving about two million dollars, the builder of which offered to frame the entire structure for \$50,000 less than the contract price, provided he was required to proportion the metal simply in accordance with the building regulations and the loads the floors had to carry. It would manifestly be to the advantage of the owners of a piece of property to give a builder such an option at the time the figures are made, rather than after the contract is settled; provided, of course, no risk is in-

curred which would involve the essential character of the building.

The steel-work of Tremont Temple is by no means completed as yet, but the results thus far have been very satisfactory. The construction includes heavy columns which are built into the wall at each side of the main hall, supporting enormous plate-girders spanning nearly seventy-five feet, upon which are borne the upper three stories The girders themselves weigh as high as thirty-eight tons each, and the loads on the columns run as high as four hundred tons. A section of the columns and of the girders was suggested by the architects on the framing drawings, but before the final plans were adopted, these sections had been changed a number of times, until they were brought to the shape which the steel contractors felt was most economical for them to build and to set in place. As the mere setting alone of one of the girders would amount in cost to more than the variation between the two lowest bidders for the steelwork, it is manifest that by such a system of specifying as has been described, the owner would probably get the advantage of the highest possible economy on the part of the builder.

The custom of simply specifying dimensions, but not sizes, of metal for girders and columns is by no means new in engineering practice, though the writer does not know of its having been followed in connection with extensive structural steel-work in a building. A very common practice with engineers in calling for bids for railroad bridge-work is to make a very complete specification of the require-ments, leaving each bidder free to design the form of truss or girments, leaving each bidder free to design the form of truss or girder which he can build most economically in accordance with the specification. This has undoubtedly been the cause of the high excellence which has marked so much of the work of our large bridge-construction companies. Every pound of metal is used to its best advantage. Full measure can be given under a specification of this sort, so that the building is absolutely strong in all its parts,—assuming, of course, that the engineer or architect understands his business.—and at the same time not a rivet nor a pound of metal is business,—and at the same time not a rivet nor a pound of metal is wasted. Few architects have the experience necessary to economically design structural steel-work, but with a method of specification such as has been described above, and by calling for bids only from reputable and capable firms, the very best of results can be secured and at the lowest possible price.

The writer is not prepared to say that the foregoing is necessarily the best, or even the correct way of specifying structural steel-work. It does, however, save a great deal of work, and where the builder or the steel-contractor intends to re-draw all of the detail-drawings, there is surely no call for the architect to prepare them. Such a system will probably secure lower figures. It enables one to check the calculations more thoroughly, since not only are the sizes figured by the builder at least once, but they should also be revised very thoroughly, at least twice, by the architect or his agent. It further puts all responsibility for measurements, connections and methods of setting where such responsibility properly belongs—upon the builder. On the other hand, the writer is inclined to believe that, generally speaking, such a method of procedure will involve more time. The builder is rarely able at once to grasp the details of arrangement in a building, and is very apt to take more time in drawing out the details of construction than would be expended by an ing out the details of construction than would be expended by an architect, especially as the drawings prepared by the builder would have to be approved by the architect before they could be elaborated into shop-drawings. Such a system, moreover, is not practicable for small jobs, and it requires a very close supervision, together with a wider practical knowledge on the part of the architect, than is involved in the mere ability to use a hand-book. Furthermore, it would not be wise to trust the working-out of the drawings to any but a thoroughly responsible and experienced builder, preferably

one who is used to bridge-construction. But, given an architect who is able to check such drawings, and a builder who is able to prepare them, it would seem as if the liberty which such a method of specification would allow, would be to the decided advantage of both the architect and the owner, without in any degree compromising the

The following is suggested as a specification to be used, which it is believed would cover all the points:

SPECIFICATION FOR STRUCTURAL STEEL-WORK.

Material. - The entire structural framework, as indicated by fram-

Material. — The entire structural framework, as indicated by framing-drawings, is to be of wrought steel.

Inspection and Tests. — The steel-work is all to be inspected, from the melting to the final delivery of the finished work on the cars, such inspection to include thorough surface, mill and shop inspection, to be at the expense of the general contractor, and be made by a competent inspector satisfactory to the architects, to whom all reports are to be made. Physical tests shall be made from each melt, and from each thickness from each melt varving by more than one-fourth inch.

The test specimens shall fill the following requirements:

Ultimate tensile strength, 60,000 to 68,000 pounds per square inch.

Elastic limit, minimum, 35,000 pounds per square inch.

Elongation in 8 inches, minimum, 25 per cent.

Reduction in area, minimum, 40 per cent.

Bending Test. — Bent 180° flat around a curve whose diameter equals thickness of specimen without sign of cracks on convex side.

The phosphorous in all steel shall not exceed 0.10 per cent. Certified analyses shall be furnished on each melt. No work is to be delivered until it has been approved and stamped by the mill-inspector.

Drawings. — Shop-drawings, copies of architects' drawings furnished, templates, reversed templates, patterns, models and all necessary measurements at the building are to be made by the contractor at his own expense.

Beams — The floor and roof heams are to be of sizes and weights

expense.

Beams — The floor and roof beams are to be of sizes and weights indicated on plans and disposed as there shown. Where beams are shown side by side they are to be bolted together with fillers or separator-plates at least once every eight feet, but not less than three times in each span. Where beams are framed together, the flanges are to be shaped so that the web shall fit closely, with no clearance.

Girders. — The plans and sections indicate the total loads on all built girders, and the maximum permissible depth and width. Within these limits they are to be proportioned by the contractor to safely sustain the designated loads and their own weight, the permissible strains per square inch being as follows:

square inch being as follows:

Extreme fibre stress	.16,000 lbs.
Compression	.12 000 lbs.
Tension	.15.000 lbs.
Shearing	.10,000 lbs.
Direct bearing including rivets	.18,000 lbs.

No section of metal is to be used of a weight of less than six pounds

No section of metal is to be used of a weight of less than six pounds per foot, and no plates of less than three-eighths inch thickness.

The contractor is to submit strain sheets for all girders, joints and connections, which are to be made satisfactory to the architects. All shop-drawings are to be submitted for approval to the architects. In proportioning the webs of plate and box girders, one-sixth of the area may be taken as resisting bending-moment.

All web-plates must be reinforced by angle stiffeners wherever the distance between the flange angles is greater than seventy times the thickness of web. The distance apart of stiffeners must not be more than the total depth of the girder. All stiffeners are to have filler-plates and must be fitted closely against flanges, top and bottom. Stiffeners must also be supplied over all bearing-points and at points of concentrated loading.

Both flanges of girders are to be of same section.

Columns.—The loads which the columns will bear are indicated on sectional drawings, together with the approximate permissible dimensions in plan. These columns may be of the Z-bar or any other marketable type, or may be compounded of channels, angles and plates, but must be proportioned to safely support the loads for which they are figured, the maximum strain upon the metal not exceeding six tons per square inch for a length equal to ninety radii of gyration, the metal being increased in accordance with the formula 17,100—57. Strain-sheets for these columns are to be made satis-

 $17,100 - 57 \frac{l}{r}$. Strain-sheets for these columns are to be made satis-

factory to the architects and all joints and connections properly proportioned. The columns are to be so built as to be continuous through the stories from bottom to top, the plates being lapped vertically and all the joints being made of strength equal to strength of the column itself. itself.

No column-plates are to be less than three-eighths-inch thick.

All columns are to be proportioned to sustain the loads indicated for them without any support from lateral bracing or from masonry walls, and in proportioning the area of metal to the length of column the least value of r is to be used.

least value of r is to be used.

Rivets — All machine-rivets are to be of mild steel, all field-rivets of refined iron. No rivets are to be used in tension.

The pitch of rivets is to be not less than three times nor more than eight times the thickness of the thinnest outside plate, nor more than six inches. The distance between the edge of any piece of metal and the centre of a rivet-hole must never be less than one and onequarter inches.

In determining the number of rivets, an excess of twenty-five cent is to be allowed for all field work.

cent is to be allowed for all field work.

Rivet-holes may be punched or drilled, but must not be more than one-sixteenth of an inch larger than the diameter of the rivet. If punched, the work must be done so that the hole shall be straight, clean and sharp, so that rivets can be driven without drifting. All joints in riveted work must be fully spliced and the ends before splicing must be dressed straight and true, so that there will be no open joints

All angle plates and knees and bent beams are to be bent while hot. When finished they must be free from seams and cracks and without initial strain.

Connections. hot rivets. - All connections and splices are to be field-riveted with

hot rivets.

All beams framed together are to have angle-iron connections at least three and one-half inches by three and one-half inches, and as long as the web of the beams and placed each side of the same with properly-proportioned rivets. The ends of all girders and beams resting on columns are to be riveted to the brackets with two three-quarters-inch rivets through the bottom flange, with an angle-iron riveted twice to top flange and twice to the column, or a similar connection of proper strength, depending upon the style of column used. The ends of all beams and girders resting on a wall or pier are to have one and three-quarters-inch by one-half-inch iron anchors bolted to the web with two five-eighths-inch bolts, the other end turned around a one-inch diameter wrought-iron spear, sixteen inches long, set vertically, in no case less

diarters in by other latinities. From another botted to the web with working the eighths-inch bolts, the other end turned around a one-inch diameter wrought-iron spear, sixteen inches long, set vertically, in no case less than four inches from the end of the beam or girder.

Plates. — Cast-iron plates are to be provided and set under the ends of all beams and girders resting on masonry. The plates under girders are to be proportioned to the loads as figured, the plates being of sufficient size to distribute the loads so that the stress on the brickwork shall not exceed fifteen tons per square foot. Under beams the plates are to be the equivalent of at least twelve inches by twelve inches by two inches for a single fifteen-inch beam, or twelve inches by twenty inches by three inches for two fifteen-inch beams bolted together. The column base-plates are to be proportioned for loads of thirty tons per square foot on the granite levellers, or fifteen tons per foot if resting on brickwork. These may be east or wrought.

Painting. — Before leaving the shop, all steel-work is to receive one coat of Harrison's "Black Anti-Rust Paint." When the framework is in place, it is to be gone over and all rivets and exposed portions retouched with black paint. The whole is then to receive one coat of Harrison's "Red Anti-Rust Paint."

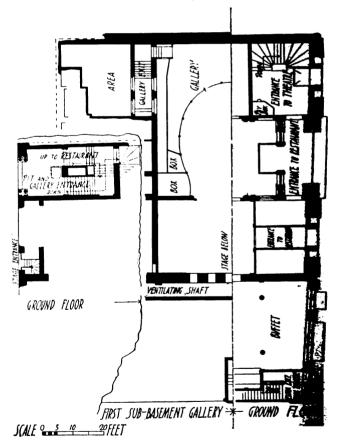
No material shall be painted until approved by the inspector, nor

No material shall be painted until approved by the inspector, nor painted where exposed to rain, nor when in an improper condition, nor shipped until the paint is dry.

C. H. BLACKALL.

THEATRES.1 - IX.

CRITERION THEATRE, LONDON.



Y the courtesy of Mr. Frank Verity, I present in this number to the readers of the American Architect the drawings and description of London's underground theatre which was designed and carried out by the late Mr. Thomas Verity, the father of the gentleman to whose kindness I am indebted. Mr. Thomas Verity held in reference to theatres the important official post of professional adviser to the Lord Chamberlain, the authority who grants the licenses to the majority of the London play-houses, and Mr. Frank Verity, upon the death of his father, was appointed to this office.

The Criterion Theatre is situated beneath the Criterion Restaurant, Piccadilly Circus, the very centre of the gayest part of fashion-able London, round which the theatres, music-halls and cafés abound.

Continued from No. 990, page 112.

No part, other than the entrances of this theatre, is above the pavement-level. In the original scheme for this building, the part now occupied by the theatre was intended as a music-saloon, but during the course of carrying out the work his idea was extended, and Mr.

tended, and Mr. Verity converted his music - saloon into what it now is.

From a paper read by Mr. Verity before the members of the Royal Institute of British Architects, in January, 1879, it is gathered that the restaurant was the main object of the undertaking which Messrs. Spiers & Pond, the noted refreshment contractors, placed under his care, and that the theatre was a mere adjunct. Mr. Charles Wyndham has, however, under his management made the Criterion Theatre as famous, if not more so, than the restaurant.

Although the subject of this paper is the Criterion Theatre, it is

so mixed up with the restaurant that, in spite of being technically a separate structure, I am forced to dwell somewhat upon the arrangements for the restaurant, as well as the theatre.

The principal entrance to the restaurant, which is in the centre of the Piccadilly façade, is under a large recessed archway, opening On the right of the vestibule is the restaurant, seventy feet by thirty feet; on the left is the buffet, ninety feet by twenty-five feet, with smoking-rooms beyond.

On the first floor is a dining-room on the west, fifty feet by twenty-

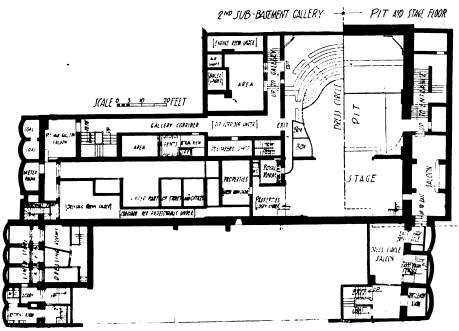
five feet, devoted to "diners Parisiens," while there is another room of the same size on the east of the staircase; several other smaller diningrooms for private parties occupy the remaining space of this level.

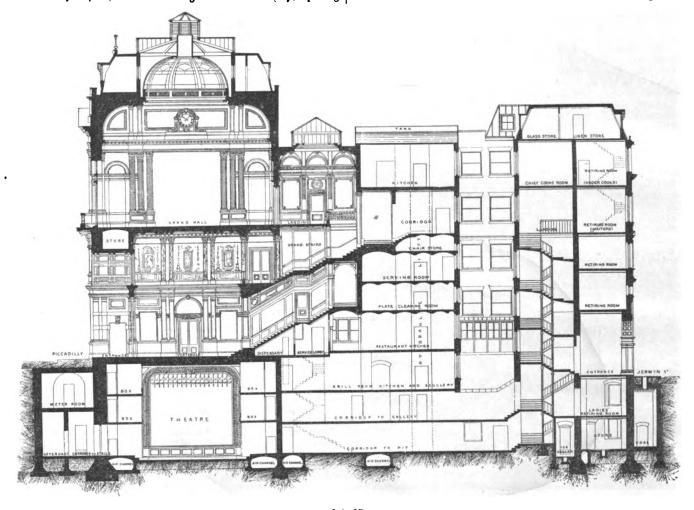
The grand dining-hall, eighty feet by fifty feet and thirty-five feet high, is on the second floor, running the whole length of the Piccadilly façade, lighted by a range of windows as well as by a large glazed dome.

The kitchens and serveries [sic] are arranged in a central block of six successive stories, one over the other, corresponding in level with the different rooms, and in

communication with one another by means of lifts and staircases. In the basement are the grill-room, kitchens, vegetable kitchen, general scullery, knife, fork and glass rooms, and such-like room pertaining to a restaurant.

Dormitories for the bar-maids and rooms for the managers are





into a rectangular vestibule thirty feet by twenty-five feet, rising through two floors and forming the central means of communication with all the public rooms. The principal staircase, leading to the table d'hôte and dining-rooms on the first floor, is ten feet wide, and is situated immediately opposite the central entrance door.

arranged on two stories round the dome-roof over the grand hall. The entrances to the stores, the grill-room and the pit and gallery of the theatre, as well as to the stage, are all situated in Jermyn Street, a street at the back of the building running parallel with Piccadilly.

Since Mr. Verity read his paper before the Institute, the demands of the business carried on by Messrs. Spiers & Pond compelled them to extend the premises under the advice of this architect. These

extensions are shown upon the plans.

It has been explained by Mr. Thomas Verity that the idea of an underground theatre was first suggested to him by the Athénée in Paris, but he has related that, whereas, that was only partly sunk, his building is entirely below the ground, and what is over it we have already seen. It was not, the architect said when describing the building, originally intended as a theatre, but as a concert-room constructed with a square gallery, and it was not until the entire carcass

was built that it was determined to convert the room into a theatre.

Mr. Verity had not to comply with the regulations now enforced in London with regard to this kind of building, otherwise he would have been compelled to abandon his project, for the rules made since this building was erected do not allow a theatre under another building, or one sunk below the ground deeper than one story, the floor of the pit not being permitted more than fifteen feet below the pavement-line. However, Mr. Verity relates how the position of his theatre was at the time somewhat severely criticised, and that all kinds of prophecies were made concerning it, some even going so far as to say that the audience would be stifled; but from careful observations of the temperature he assured himself that it compared very favorably with most other theatres. This was, of course, in the days before the introduction of the electric-light, which has since been installed in the Criterion Theatre.

The ventilation of this house was carried out by artificial means, at the time, and indeed one may almost say even at this time, the Criterion was, and is, the only mechanically ventilated theatre in London. The planning of the arrangements for ventilating and warming naturally involved considerable difficulties, owing to the structural conditions. These however, were overcome by obtaining numerous air-shafts in the necessary positions for carrying away the vitiated air and introducing the fresh air. For the ventilation of the theatre, there was provided a fan four feet six inches in diameter, which draws a supply down a series of air-shafts into a chamber under the floor of the theatre. From this chamber, shafts are carried up the walls to diffuse the air at the different levels around the whole of the auditorium. The incoming air is warmed in winter by hot-water coils, cooled in summer by a water-spray. conditions. These, however, were overcome by obtaining numerous coils, cooled in summer by a water-spray.

The vitiated air is extracted by a central perforation, and is drawn out by an extract-shaft four feet by three feet, running up the entire height of the building, showing how Mr Verity availed himself of every means possible to make the air in his theatre pure. It is interesting to note that in order to increase the power of this shaft, the waste heat from the restaurant grill-stove, and the products of combustion from the sun-burner are carried up the centre in independent iron pipes. Additional extract-shafts are situated over the

stage and over the back of the gallery.

The entrance to the stalls and dress circle are on the right of the Piccadilly façade, those to the pit and gallery are in Jermyn street. The construction of the theatre is, on the whole, of fireproof materials, the corridors and staircases being entirely fireproof.

The theatre occupies below the ground the entire length of the Piccadilly front, being eighty feet long by fifty feet wide and twenty-seven feet high — quite a small "house." It is divided into pit and seven feet high—quite a small "house." It is divided into pit and stalls on the lowest floor, balcony or dress-circle and boxes on the first tier, and gallery and boxes on the upper tier, and will seat about one thousand persons. There are extra exits into Jermyn Street from stalls, balcony, etc. The stage is twenty-five feet deep, having a proscenium-opening twenty-two feet wide. The dressing-rooms are in a separate block approached from Jermyn Street.

Such is what I have termed London's underground theatre, the

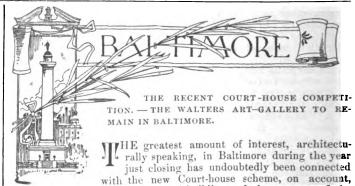
Such is what I have termed London's underground theatre, the notes for the description of which are culled from the architect's own report with the permission of his son. Since the construction of the Criterion, several theatres have been built in London, partly sunk below the surface, that is to say, with the pit underground and the first tier on the pavement-level. The argument used when speaking of the "safety" of these houses is that, should a stampede take place, the people rushing up stairs would be less likely to stumble than those rushing down stairs. This argument can be, and has been applied to the uses of the theater we now have hefere we since been, applied to the case of the theatre we now have before us, since to reach the street every one has to go up some steps.

I have omitted to mention the arrangements made for the gaslighting of the house. All the burners at the back of the circles are let-in to recesses in the walls, and shut-in with glazed doors, and have an extract-flue over them to take off the products of combustion. The sun-burners and stage batten-lights are also ventilated in like manner, an admirable provision worthy of being copied where gas is still-used.

ERNEST A. E. WOODROW.

[To be continued.]

Destruction of Indian Hieroglyphics. — The Wenatchee Indians of Washington are protesting against an act of vandalism and sacrilege committed by the Great Northern Railroad Company. The workmen of the Company lately blasted out some big rocks near the Indian settlements, which were covered with hieroglyphics. The rocks were the sacred record of the Wenatchee tribe, and the inscriptions told of their chiefs and battles, and the whole history of the people. The Indians are naturally intensely indignant, but it is a frequent occurrence for relic-hunters and tourists in the Northwest to rob the graves of Indians of all sorts of articles, and even to disinter and rob bodies of ornaments, and no redress is obtainable. — Philadelphia Telegraph.



not only of the cost of the proposed building and the amount of the city's funds involved therein (a matter that often evokes the expression of architectural interest and criticism from sources where enlightenment in art matters is not suspected), but also because of the extent of the building and the conspicuous site, the personal interest that the courts and lawyers naturally felt in what was to be done for their future comfort and convenience, as well as the general public attention drawn to the competition where many local firms were known to be competing with especially-invited outside men and the world at large. The local press kept this interest alive by frequent paragraphs and editorials, till, finally, during the few days intervening between the statement that the actual award had been number fifty-seven" and the announcement that this numher was discovered to belong to a local firm, [Messrs. Wyatt & Nölting, of Baltimore,] the interest arose to something like a genuine The commendable professional feeling and methods enthusiasm. which had so far guided the action of the committee were still conspicuous in settling the terms of the agreement between the city and the architects, consistent with a rather conservative feeling in protecting the city's interest, while entering a somewhat new field in contracts, for which Baltimore furnished no precedent directly bearing on the subject, and in which the unusual condition had to be met of providing for the cost of a building for which only a little more than one-half of the required amount had yet been appropriated from the public funds, while it was particularly desirable that the architects should at once enter into an agreement to make working-drawings and specifications for a building whose probable oner would be ings and specifications for a building whose probable cost would be nearly double the amount already appropriated for the purpose. It, however, proved to be a case easily solved by the clever skill of lawyers, and confidence and amicable feelings on both sides. The public exhibition of the ten premiated designs made it evident that while some of the others possibly showed a somewhat more monumental treatment, in plan at least, than the accepted one, it was with the neglect of conditions specially required by the letter of in-structions and further by the sacrifice of important features of practical utility and convenience in the general arrangement

A rather peculiar incident occurred in connection with the assignment, after the award, of the proper names and addresses to the various designs. These, by instructions, were to be enclosed in blank envelopes accompanying each portfolio. It was noticed that two portfolios among the seventy-nine sent in, had no envelopes or addresses of any kind with them and had to be laid aside as "unaddresses of any kind with them, and had to be laid aside as "un-known." The author of one of these designs had, however, meanwhile discovered his accidental omission, and wrote an anonymous letter to the committee, enclosing a blank envelope containing his address, with some description of his design sufficient to enable them The other competitor knew nothing of the fact that his envelope had been lost in the transmission, till all the awards had been made and published. This unfortunate happened to be a Baltimore man, and upon his interviewing the committee in the matter, he learned that, owing to some other irregularity, one of the awards to another local man had to be reconsidered, leaving one of the local prizes of \$400 yet unappropriated. Under these peculiar circumstances, Professor Ware kindly consented to have all the local designs submitted to him for further consideration. Unfortunately, however, as compensation for the mishap, the new award did not fall to the anonymous

Another fact clearly illustrated by the exhibition was the difficulty evidently experienced by all the competitors - a common stumblingblock in all such designs—of composing a monumental and dignified façade of large extent with any sort of truthful expression of the purpose and interior scheme, where there is necessarily a complicated arrangement of many large and small rooms of widely varying dimensions and heights, and all to be adequately lighted and ventilated. The problem of giving the principal entrances their due expression on the façade, without making them mere features of surface decoration, running over more than one story, and also of treating the vast wall-spaces with simplicity and dignity, without either leaving them barren and crude, or applying architectural ornamentation too rich and elaborate for a building of such character—a great Hall of Justice—was again a difficulty that made itself evident in all the designs, and was not met most happily in those from offices prominent in the country for their successful solving of similar problems.

The world of art was startled a few weeks ago by the news of the

death of William T. Walters, as, because of his habitually quiet and secluded habits of life, the fact of his serious illness had not become very generally known. So few and so isolated in the wide area of America seem the genuine patrons of his character, that in the death of such as he, a sense of shock and loss is felt by all who appreciate the higher aims in American progress in art, and there is a consciousness that the immediate results, from various direct and indirect causes, might be some important changes in the present status of art interests and collections. All that a community owes to one of its great benefactors is always more clearly and sharply brought to view by his unexpected death than at any other time. This is certainly the case to-day in Baltimore in regard to Mr. Walters. All the deserved prestige to the city that the rare collec-Walters. All the deserved prestige to the city that the rare collection he has gathered by careful thought, fine taste and large expenditure within the walls of his house, as well as his gifts of the bronze groups in Mt. Vernon Place, and his own strong personality, so well known both at home and abroad, is now appreciated even more thoroughly than ever before. The vital interest to the city was, naturally, the future disposition of that great gallery which for the last twenty years has by its own worth made Baltimore conspicuous in the art world. the art world. Because of the admiration and pride the city always felt for this treasure, it might almost be pardoned the fancy that it had, in some way, become inalienably its own, and the sudden reminder that this was not so, and the bare possibility that this gallery might now be scattered or moved bodily elsewhere, brought with it a sense of impending calamity. Respecting, however, the reserve which Mr. Walters always maintained in regard to his affairs, and recognizing the fact that the status of the gallery had always been that of a private collection very generously opened at fixed times to

recognizing the fact that the status of the gallery had always been that of a private collection, very generously opened at fixed times to the public, the expression of opinion was as guarded as good taste and proper feeling in the matter would require.

The sense of relief and gratification, then, was very general when it was known that the terms of the will required that the gallery should be kept intact, and that for this purpose, while it was left to Mr. Walters's two children, either one of them should possess it as an entity by paying the the either each of the senses of the sense of the se two children, either one of them should possess it as an entity by paying to the other one-half its assessed value. The only other disposition of the gallery surmised, was that it might possibly have been left to the Metropolitan Museum of New York, in which Mr. Walters was deeply interested. One cannot but feel that, while this would have been a worthy addition to a great and growing institution, honored in both the giving and the receiving, nevertheless, as unique and beautiful as the Walters gallery is, in the huge city of New York, where wealth rapidly buys up what the world has to sell and continues to add one big thing to another, after a lapse of years this might be only one among others of great gifts to the Metropolitan Museum, largely losing its identity in the mass. Whereas, while it remains in Baltimore—its original home, where it has become so long identified with the city, and dear to the hearts of the people—it gains in importance by its very separation from other collections, it gains in importance by its very separation from other collections, and will always have the additional charm that both itself and its founder will be loved and honored by an entire community through

coming generations.

THE GIBBON COMMEMORATION.



exhibition is now open in London which has excited no little interest, and has attracted a considerable number of visitors. It consists of a collection of

number of visitors. It consists of a collection of portraits, books, manuscripts and personal relics of Edward Gibbon, the author of the "Decline and Fall of the Roman Empire"; the first centenary of whose death is in this manner being commemorated. The idea of the exhibition originated with Mr. Frederic Harrison; by whose influence it was carried out, under the auspices of the Royal Historical Society, a national air being given to it by the trustees of the British Museum kindly housing the collection in the King's Library.

The pictures exhibited include the well-known half-length portrait of Gibbon, by Sir Joshua Reynolds; one or two evident copies of the same; a so-called portrait by Romney, but with no resemblance

the same; a so-called portrait by Romney, but with no resemblance to him; the portraits of Mrs. Gibbon and Lady Acton, mother and cousin of the historian; besides those of the Earl and Countess of Sheffield, his life-long friends. The face of Gibbon is not pleasing; it is very short, very fat, and with a pronounced double chin; the hair is brushed back from the forehead and tied in a bag-wig. He wears a red coat and lace ruffles to his shirt. Besides the portraits there are several views of the family seat, Buriton Manor and the church there, near which his father was buried; but of greater interest are the water-color sketches of places in Lausanne so intimately connected with the great historian, viz: his house, the pavillion in the garden with Gibbon seated in one corner; and the terrace; places where he lived and worked, now unfortunately merged in the Hôtel Gibbon and its garden: all traces being lost of even the summer-house where he wrote the last lines of his immortal work, feeling as he says in a letter to a friend "as if a load was taken from my

The present proprietor told a recent visitor that he wished there had never been a summer-house, for every one asks where it stood, and "I really don't know." One day, however, two of your fair countrywomen swooped down upon the place, armed with camp stools, being determined to stay there till he told them the exact spot, which

they insisted he must know. So, in despair, the poor man took them to a spot in the grounds and said, "to the best of my belief, the summer-house stood there."

Some silhouettes by Lady Diana Beauclerk and Mrs. Brown are very clever and amusing; they depict Gibbon taking snuff, showing off his clumsy figure to perfection. In a glass case are some fine miniatures; one, a fine example of Bone's work, is set in pearls and forms a locket, having hair at the back: also a medallion bust by Wedgwood, his court sword and buckles, gold watch and snuff-box, and the copper-plate for visiting cards, shorter and broader than the shape in vogue at present; a family Bible, said to have been always at his bed-side, and other personal belongings. Besides these we see packets of old playing-cards, the backs used for various memoranda; e. g., a catalogue of his library and notes-of-hand, such as: "Bon pour cinq cent livres à Blondel mon valet de chambre, E. Gib-bon, £500, à 1 April, 1789."

"Bon à moi-même pour trois cent soixante livres. E. Gibbon, à 1 Juillet, 1785."

From these articles, which in ordinary lives would be passed by, we turn with lively interest to the books, manuscripts and letters to and from some of the literary giants of last century. Here we see Macaulay's copy of the "Miscellaneous Works" with his notes on the margin; Gibbon's own copy of the "Decline and Fall" with many notes and emendations in his own hand, and the copy given "As memorials of friendship and esteem to Lord Sheffield." A few extracts from the correspondence will be of interest, doubtless:

[Gibbon, to Lord Sheffield on the breaking up of Lord North's Ministry. London, July, 1782.] "Every hour teems with a fresh lye. In short, three months of prosperity has dissolved a phalanx, which has stood ten years' adversity. Next Tuesday, Fox will give his reasons, and possibly be encountered by Pitt, the new Secretary or Chancellor, at three-and-twenty."

[To the same on Sheridan's speech at the impeachment of Warren

Hastings,] "which included a compliment much admired by a certain historian of your acquaintance. Sheridan, in the course of his speech, sunk into Burke's arms; but I called this morning and he is perfectly well.

ctly well. A good actor!" — London, 14th of June, 1788. [From William Robertson, the historian, thanking Gibbon for the ft of second and third volumes of the history.] "I can recollect gift of second and third volumes of the history.] "I can recollect no historical work from which I ever received so much instruction; and when I consider in what a barren field you had to glean and pick up materials, I am truly astonished at the connected and interesting story you have found." Edinburgh, 12th May, 1781.

[From Adam Smith, to thank him for the last volumes.] "I cannot express to you the statement of the last volumes.]

[From Adam Smith, to thank him for the last volumes.] "I cannot express to you the pleasure it gives me to find that, by the universal judgment of every man of taste and learning, whom I either know or correspond with, it sets you at the very head of the whole literary tribe at present existing in Europe." 10th Dec., 1788.

[Gibbon to Lady Sheffield.] "Should you be very much surprised to hear of my being married? Amazing as it may seem, I do assure you that the event is less improbable than it would have appeared to myself twelve months ago. Not that I am in love with any particular person — I have discovered about half a dozen wives who would blease me in different ways by various merits. Could I find all these please me in different ways by various merits. Could I find all these qualities united in a single person, I should dare to make my addresses, and should deserve to be refused." Lausanne, October,

1784.

The holograph will is with these papers, and, like all his writings, is clear and delicate. It commences thus: "It is superfluous to request that all my funeral expenses be discharged without delay."

. "I give to M. William de Séverv, of Lausanne (whom I wish to style by the endearing name of Son)," certain legacies.

We close this paper with some remarks on the manuscripts, decidedly the chief feature of the exhibition. Gibbon left six sets of papers styled "My Own Life," dealing with it at different times. In one on his life at Oxford, he says that he arrived there "with a stock of erudition that would have puzzled a doctor, and a degree of ignorance of which a schoolboy would have been ashamed," where stock of erudition that would have puzzied a doctor, and a degree of ignorance of which a schoolboy would have been ashamed," where he found the fellows of his College "immersed in port wine and Tory politics." The portion of his journal describing his visit to Italy, where he says "I lived with the dead," concludes with a famous passage "It was at Rome, on the 15th Oc ober, 1764, as I sat amidst the ruins of the capitol, that the idea of writing the decline

and fall of the city first started to my mind; the whole college of cardinals were as nothing to me."

Gibbon bequeathed all his papers and much personal property to Lord Sheffield, whom he appointed his executor. In 1796, Lord Sheffield published a volume containing much correspondence and unpublished papers entitled "Miscellaneous Works," and in 1814 a new and greatly-enlarged edition; but at his own death he prohibited, by a clause in his will, the publication of any further papers. In his speech at a meeting in connection with the centenary, Sir Grant Duff, P. R. H. S., in the chair, Mr. Frederic Harrison drew special attention to "the extraordinary manner in which the 'Memoirs' are pieced together so as to form a pot-pourri," concocted with the greatest freedom; "not many paragraphs occur in which some phrase is not deleted or varied." Probably this was done to shield his memory from the charge of unorthodoxy or anything detrimental, as the following incidents will show:

Gibbon was sent as a youth to Lausanne to the care of Pavillard, a Calvinistic minister, in order, as his father wrote, that his tutor might now "confirm him once and for all, in Protestant principles."

This was the result of an impulsive union with the Church of Rome

made by Gibbon.

made by Gibbon.

In February, 1755, he wrote to his aunt, Miss Porten, telling her of the success of his father's experiment; and of his experience of "a joy extremely pure, and the more so as I know it to be not only innocent, but laudable." Lord Sheffield stops here and gives no hint that more followed. The complete letter is now given to the world by the British Museum, to whom it belongs; and the continuation puts a very different complexion on Gibbon's temper and mode of life at that date: "Could I leave off here" after speaking of the satisfactory change in his religious opinions, "I should be very glad; but I have another piece of news to acquaint you with." He tells his aunt in detail, that he had been playing at faro, and had lost heavily. He has no money, his creditors are pressing for payment, and the thought of the anger of his father, who waits for proofs of his religious conversion, terrifies him. His feelings come to a point in the postscript: "I shall make no use of any other prayers than in the postscript: "I shall make no use of any other prayers than this plain recite [sic] of my situation. If it produces no effect on you, nothing else would. Remember only that my term [allowed by his creditors] finishes March 15th. I tremble for your answer, but

"I am, dear Kitty, your unfortunate nephew, E. Gibbon."

His aunt, apparently, did not come to his assistance; for his stepmother has scribbled across the top of his first page: "Pray remember this letter was not addressed to his mother-in-law [herself] but ber this letter was not addressed to his mother-in-law [nersen] out to his aunt, and an old cat as she was to refuse his request." Gibbon was only eighteen at this time, and it shows that he was not the precociously staid youth that his admirers have hitherto believed him to be; when we read a confession from his own pen, of a boyish the usual accompaniment of great remorse. This escapade with the usual accompaniment of great remorse. This result of Lord Sheffield's manipulation of the papers, seen in the light of the holograph journal, is so startling that a hope was expressed at the meeting alluded to, that the present earl would issue a new volume of the letters and papers of the illustrious historian, confided to his ancestor. We should mention that the various objects in the interesting collection were lent by Lord Sheffield, M. de Charrière de Severy, and the Museum of Fine Arts, Lausanne, and have been very well arranged; full descriptive labels being appended to each.

THE HORSES OF APOLLO.



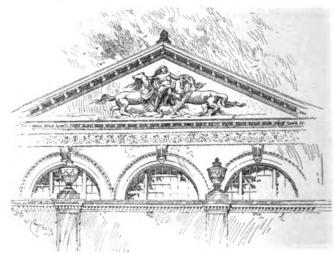
Fountain in the Bassin d'Apollon, Versailles, France.

E believe, though not quite sure on the point, that amongst the architectural casts which the French Government sent to the World's Fair and subsequently presented to the City of Chicago or the Columbian [Marshall Field] Museum was one which Chicago or the Columbian [Marshall Field] Museum was one which presents one of the most graceful triumphs of the French Renaissance in the field of sculpture. If a cast of Robert Le Lorrain's beautiful bas-relief is not to be seen at Chicago, it can be seen by any visitor to the Palais du Trocadéro, at Paris, who, if not content with the copy, can travel to the other end of the city and inspect the original sculpture on the wall of the Imprimerie Nationale, where a wise and discriminating artistic sense has preserved it in the place it originally held, over the entrance to the stable of the Hôtel de Rohan as the building was once known. The merit of the work is such that it is instantly perceived: never have we known Lorrain's horses of Apollo at the drinking-fountain to be thrown on the screen without meeting more instant and prolonged applause than any other subject of similar nature. Other subjects may be as animated or as skilfully handled as sculpture, but it is difficult to find one where grace of conception and poetry of motion is so married to skill of manipulation.

of manipulation.

This building in the Rue Vieille du Temple, occupied as the Government printing-office since 1808, was once known as the Hôtel de Strasbourg, but better known as the Palais Cardinal, because of its occupancy by that Cardinal de Rohan who played so important a part in the world-famous scandal of the "queen's necklace." How isolated, how relatively known or unknown this bas-relief originally was we do not know, but the fact that it is nearly nine feet high and fifteen feet wide is testimony to its importance, and leads one to wonder that it has escaped the wrath of the canaille who, in the many unrisings since its creation, have wreaked such wanton vengeance on uprisings since its creation, have wreaked such wanton vengeance on the unoffending offspring of art.

This escape, which was probably due to the position of the bas-relief on the interior wall of a court-yard, was shared in large measure by the sculptures that adorn the famous stables at Chantilly, which were probably saved from sharing the destruction which the



W. Theed on the Queen's Mews, Buckingham Palace, London

mob visited on the equestrian statue of Anne de Montmorency only because it was in a hurry to get back again to Paris, while to reach the sculptures that decorate the cornice and pediments of this building would have taken too much of the time that the vagabonds found so valuable, now that they had the chance to use it in violence and mischief, the love of which was theirs by right of inheritance. Who the sculptors were, who executed the work at Chantilly, pre-sumably under the direction of the architect Jean Aubert, is not known, and to tell the truth, it is hard to determine the real artistic worth of much of the work as the figures are placed so high above the ground; but they do wonderfully good service in aiding the general richness of effect. The chief feature, however, the bas-relief in the semicircular tympanum over the great door, shows a group of un-caparisoned horses which is very effective, and has something of the artistic quality of the bas-relief at the Imprimerie Nationale. This bas-relief is so noticeable and so easily within reach of those bent on mischief, that the suggestion may be hazarded that its escape may have been due to the fact that, by the time the mob had accomplished its main object, night had fallen, and they really were ignorant that an attack on the stable would give them the same sort of pleasure they had already enjoyed. Whether this group of horses at Chantilly was a portrait group or not, there is no means of knowing, but we may as well fancy that, just as the bas-relief on the former Hôtel de Rohan represents the watering of the horses of Apollo, this one at Chantilly shows the same steeds after they have drunk their fill and been turned out to pasture.

For some reason or another, sculptors have preferred to associate Apollo rather than Neptune with horses, even in cases where the presence of water and the actual position of the group would seem to require the presence of the marine deity, rather than that of the beaven-climbing nephew. Although, to be sure, there is the group of Neptune and his car in the famous fountains at Schönbrunn and Potsdam. But on the other hand, there is the group equally famous, even if it is only of lead, of Apollo and his car in the Bassin d'Apollon at Versailles, the work of the sculptor Jean Baptiste

In the park at Versailles there is also another very curious group, or series of groups, in which the association between Apollo and the horse is made evident. One of the cleverest and most successful feats ever effected by a landscape architect is the semi-secluded and altogether bewitching Bosquet d'Apollon, where in the middle of what appears to be a copse of wild-growing trees, is to be found a small and placid pool from whose clear surface the visitor whom change small and placid pool from whose clear surface the visitor whom chance causes to enter the grove sees reflected the gloomy image of a large cave that overhangs one bank. On looking from the reflection to the original there is seen beneath the arched opening a marble group, more than life size, which represents Apollo receiving the flattering attentions of his nine attendant muses, while in shallower recesses upon either side are a pair of horses in their turn receiving at the hands of mermaid and triton! that attention that their long diurnal course has earned for them. These three groups, the large middle group by the sculptors Girardon and Regnaudin, and the other two the work of Gilles Guerin and the brothers Gaspard and Balthazar Marsy, seem here to have at length found their natural and intended position after an extended series of trials in other places. In the seventeenth century they formed the central features of an ambitious grotto in rocaille work somewhere in the interior of the palace, where one could well imagine. We fancy that the majority of visitors never guess that this grotto is not a natural one, or, at least, one hewn out of the living rock; but in reality it is a cunning piece of construction which does honor to the artist and landscape gardener Hubert Robert, and a moment's close observation will reveal the joints of the

huge voussoirs and those between the drums of the great pillars in the background.

These two cases are not the only ones at Versailles where Apollo is inseparable from the steeds which brought Phaethon to grief. As one leaves the cour d'honneur, he sees in front of him across the wide one leaves the cour d'honneur, he sees in front of him across the wide roadway two large groups of low buildings, now occupied as the School of Artillery and the School of Engineering, which were, at the time they were originally built by Mansart, known as the Grandes and Petites Écuries. In the semicircular tympanum above the central door of each building is a very animated and seemingly excellent piece of sculpture in high relief, one of which, at least, appears so far as can be determined from a distance — since the sentries allow no one to enter the enclosure — to represent Apollo in his chariot.

Doubtless, there are many other instances where sculpture of this

Doubtless, there are many other instances where sculpture of this special kind and representing this particular subject is to be found decorating stable buildings, but they are not by any means as common as one would expect. A very notable instance of this kind of adornment, though the Classical incident selected by the sculptor is Mews at the side of Buckingham Palace, London. In this case, the sculptor, William Theed, chose as his subject Hercules destroying the mares of Diomedes. The reason why this particular subject appears in a sculpture upon a London building may lie in the fact that the British Museum is situated in the same metropolis, and that a fairly noticeable circumstance is that amongst the large collection of works of Etruscan art stored in this building are many small bronzes, some of excellent character, and some painted pottery which represent over and over again in ever varied form this fable of Hercules and the canabalistic mares of Diomedes.

CONSTRUCTION.1 - XXVIII.

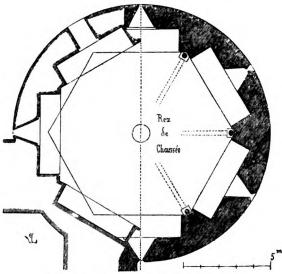


Fig. 143. Angle Tower of the Chateau de Coucy.

UT when a powerful seigneur wished to build a fortress he was not reduced to solicit gifts from his vassals, to kindle the zeal of the lukewarm and to rely on time and his successors to complete that which he begins. He wished his château in his lifetime; his need was pressing, immediate. Richard Coeur-de-Lion stopped for nothing when he wished to build the fortress of Andeli, the Château Gaillard—neither usurpations nor sacrifices, nor coërcion, nor money; he proceeded to build the stronghold in spite of the Archbishop of Rouen, although the City of Andeli belonged to him. Normandy is put under the ban at the instigation of the King of France. The affair is carried up to the Pope who decrees a fine in favor of the prelate and raises the ban. But during these protestations, these menaces, these discussions, Richard does not lose a day; he is on the spot overseeing and spurring on the workmen; his fortress rises, menaces, these discussions, Richard does not lose a day; he is on the spot overseeing and spurring on the workmen; his fortress rises, and in a year it is done and well done—the scarp and the moats finished, the place in a complete state of defense and one of the strongest in the North of France. When Enguerrand III built the Château de Coucy, it was in preparation for an approaching and terrible struggle with his suzerain. A month of delay might frustrate his ambitious projects—hence even to-day it is evident that the enormous works carried out by his orders were prosecuted with a surprising rapidity—a rapidity that brooks no negligence. From base to summit the same materials, the same mortar, even more, the same workmen's marks were there; we have counted more than a same workmen's marks were there; we have counted more than a hundred of them on the faces which are still visible. Now each workman's mark belongs to one particular stone-cutter, as is the case to-day in Burgundy, in Auvergne, in the department of Lyons.²

A hundred stone-cutters to-day give the following proportions of the other trades, on the bases of a construction like that of Enguerrand III:

Draughtsmen,)											
Fitters,	١.				 							20
Blacksmiths,)											
Mason's laborers,)											
Derrickmen,	>.		 				٠.					100
Setters,)											
Graders,)											
Laborers,	>.		 		 							200
Mortar mixers)											
Masons and helper	s											200

To supply

Quarrymen	and lim	e-burne	ers.	 	 	 	100
Sand-digge	rs			 	 ٠.	 ٠.	25
Teamsters	and helpe	ers		 ٠.	 	 	-
							795

say in round numbers eight hundred (800).

Eight hundred workmen occupied entirely with masonry, pre-suppose an almost equal number of carpenters, iron-workers, plumb-ers, tile-layers, paviors, cabinet-makers and painters (for all the inside work of the Château of Coucy was painted on fresh plaster). We must then admit that there were at least sixteen hundred work-men busied in the construction of this fortress. If we examine the edifice, the uniform way in which the work is gotten out and set, the perfect unity of the conception in ensemble and details, the unithe perfect unity of the conception in ensemble and details, the uniformity of profiles, show a promptness of execution which rivals that which we see to-day. Such activity resulting in so perfect a structure is found only by exception in religious constructions, as, for instance, the façade of Notre-Dame at Paris, in the substructure of the Cathedral at Rheims, in the nave of the Cathedral of Amiens. But these are only special cases, while in the fortresses of the Middle Ages, from the twelfth to the fifteenth centuries, the traces of this better was always a found at the same time with a carealysis. of this haste may always be found at the same time with an excellent execution, well-conceived plans, studied details - no hesitation, no

experiments.

Let us take, for example, one of the corner towers of the Château de Coucy, each of which is fifteen metres in diameter over all, not

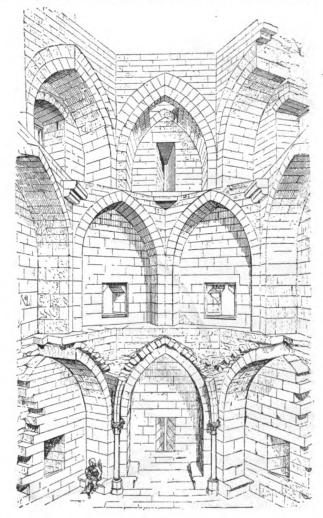


Fig. 144. Angle Tower of the Chateau de Coucy.

including the lower weatherings. Each of these towers has five stories in addition to the roof. The lower story, whose floor is a little above the exterior grade, is vaulted in cupola form between walls whose thickness is about 3.50 metres beside the weathering.

¹From the "Dictionnaire raisonné de l'Architecture Française," by M. Viollet-le-Duc, Government Architect, Inspector-General of Diocesan Edifices, transated by George Martin Huss, Architect. Continued from No. 990, page 118.

² The marks cut on the exposed faces by the stone-cutters were made to allow the foreman to keep track of each one's work; these marks prove that the work was paid for by the piece, by the job and not by the day; still further they indicate the number of workmen employed, for each had his own.

Above this story, which is nothing but a cellar intended for provisions, rises a story hexagonal within and vaulted with transverse

The other stories are floored over. Figure 143 shows the super-posed plans of the stories above the cellar. The piers of the hexagon are alternately placed, solids over voids, so that in perspective section we see that the abutments are built over the keys of the arches in tierce-point, forming niches between the piers as shown in Figure 144. This construction avoids the weakening which ordi-Figure 144. This construction avoids the weakening which ordinarily occurs in a cylinder enclosing niches placed one above another; it also admits piercing loop holes over-lapping one another and commanding all points of the horizon. We assume the vaulting of the lower story above the cellar to be suppressed, in order to show the general effect of the construction. Access to this cellar was had only by the circular opening pierced at the summit of the vault. It is easily seen that such a construction, resting upon a solid foundation and a lower story with very thick cylindrical walls and reinforced by an exterior talus, buttressed at each story by over-lapping piers, ought to bid defiance to all the efforts of the sapper; for, in order to overthrow a tower thus built, it would have been necessary to undermine half of its diameter, not an easy task at the top of an

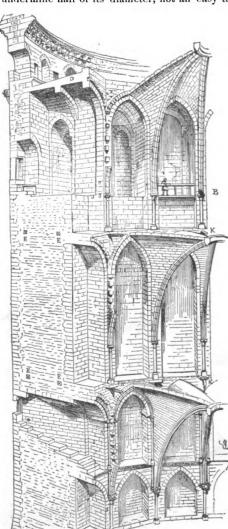


Fig. 145. The Keep: Chateau de Coucy.

the outworks. Let us now examine the construction of the Keep of Coucy, built by Enguerrand III, about 1225.

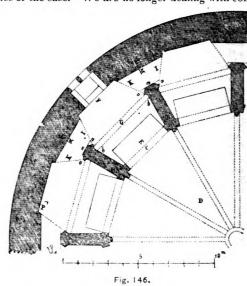
escarpment and in the face of a garrison commanding subter-ranean issues to

It is a cylinder of more than thirty metres over all with a height of sixty metres. It comprises three vaulted stories, each thirteen metres in height and a crenellated terrace. ground-floor line is five metres higher than the bottom of the ditch, and from th e this interior floorline level as far as the pavement of the ditch, the cylinder splays out conically.

The masonry forming a solid cylinder for the height of the two lower stories is five and a half metres thick above, and is further consolidated by interior piers forming twelve counterforts carrying the spandrels of the vaults.

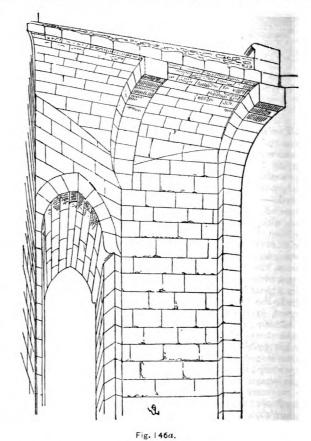
Figure 145 gives in perspective a section of this enormous tower. The lower niches are cut through half-way of their height by the arches A, making out-of-the-way places for storing arms and tools. In the second story, the niches between the counterforts rise as high as the vaulting and form wall-arches for it. In the third story the construction might be made lighter; therefore the cylinder is set back construction might be made lighter; therefore the cylinder is set back on the interior so as to form a raised gallery B enabling a larger number of people to assemble in the upper hall. But it is essential to explain the remarkable construction of this gallery. In plan a quarter of this story of the Keep gives Figure 146. On the twelve piers AB are carried the transverse overhead arches C, acting as wall-arches for the large central vault D. These piers AB have their two lateral faces parallel. From the points b spring other transverse arches G parallel to the arches C, but wider, and intersecting at their spring the skewed surfaces of the piers. On the transverse arches C and G are sprung the pointed cradle-vaults EF. Other cradle-vaults IK, parallel to the sides E of the twenty-four-sided polygon, rest upon the jambs E0, on the faces E1 and on the corbelled supports E2. The perspective section looking from the point E3 gives Figure 146E3 which explains the penetrations of the arches and vaults into the skewed vertical surfaces. The plan 146 and the perspective section 146E3 show clearly that the architects of the early perspective section 146a show clearly that the architects of the early

part of the thirteenth century had familiarized themselves with the most complicated combinations of vaults and that they knew perfectly well how to vary the disposition of them according to the necessities of the case. We are no longer dealing with constructions.



These piers which broaden out so as to bind themselves more strongly to the outer cylinder and buttress it by means of the vaults IK of plan 146, show very intelligent observation of the effects which can be produced in such enormous structures; and, as a matter of fact, although the engineer Metezau exploded a small mine in the centre of the stronghold in order to blow it up, he succeeded only in shooting the vaults up into the air and in cracking the tower in three different points without overthrowing it. The enormous three different points without overthrowing it. The enormous cylinder acted like a tube charged with powder, throwing out the vaults as if they were grape-shot. This upper gallery carries a large open chemin de ronde D (see Fig. 145) and the central vault was roofed with lead.

At E (same figure) are wooden tie-beams 0.30 centimetres square forming a double dodecagon at each story and joined to radiating ties K, also of wood, which meet at the centre of the vault. three central vaults are each composed of twelve semicircular groins with wall-arches whose keys are placed upon the level of the central key; the triangles between the twelve groins are constructed in



accordance with the ordinary method. Thus each one of the twelve bays being very narrow relatively to the diameter of the vault, it results from this that the groins only carry the radiating walls up to about two-thirds of the vault and that this central construction being

very light has, nevertheless, a powerful bracing action to the centre of the cylinder. There is no other system of vaulting action to the Gothic system which admits such favorable treatment and this should be distinctly recognized. The whole structure from top to bottom is made of dimension stone, 40 to 45 centimetres height of beds, with squared faces, roughly, but accurately dressed. In proportion as the art of besieging places becomes more methodical, military constructions improve in character, the materials employed are larger and better selected, the walls thicker and better laid, the backing filled-in with more care and the mortar better mixed and stronger. During the thirteenth century the military constructions were made with the greatest care, the means of resistance offered to attacks singularly The walls of small ashlar or rubble used during the eleventh ample. The walls of small ashiar or rubble used during the eleventh and twelfth centuries are given up as a general thing; instead, they are made of hard dressed stone, having sufficient bearing into the wall so as not to be easily torn out by the crow-bars or pickaxes of the pioneers. In the backing are frequently found bonding

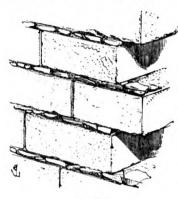


Fig. 147.

courses of stones and relieving arches buried in solid masonry.
The parapets are composed of through stones, the exterior surfaces admirably fashioned.
As late as about 1240, it frequently happens that the courses are laid on very thick beds of mortar (0.04 to 0.05 centimetres) mixed with spawls of hard stone (Fig. 147); but this proceeding which gave to the beds of the courses great adhesion on account of the quantity of mortar used,1 had the inconvenience of facilitating the introduction of the pioneer's crow-barnes. On the contrary, dating

between the beds to detach the stones. from this epoch the beds of mortar of the courses forming the faces of fortification are thin, about 0.01 centimetres, sometimes less, the edges of the stone are sharp, without spawls and their rough faces frequently form projecting bosses so as to mask the position of the beds and joints (148). It was, in fact, difficult to force the joints of stones thus faced, either by sapping, by battering-rams or any of the engines made to beat down walls.

[To be continued.]



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

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PREMIATED DESIGN FOR THE BALTIMORE COUNTY COURT-HOUSE, BALTIMORE, MD. MESSRS. J. A. & W. T. WILSON, ARCHI-TECTS, BALTIMORE, MD.

[Issued with the International and Imperial Editions only.]

COMPETITIVE DESIGN FOR THE BALTIMORE COUNTY COURT-HOUSE, BALTIMORE, MD. MR. G. T. PEARSON, ARCHITECT, PHILADELPHIA. PA.

[Issued with the International and Imperial Editions only.]

COMPETITIVE DESIGN FOR THE BALTIMORE COUNTY COURT-HOUSE, BALTIMORE, MD. MR. ALEXANDER HAY, ARCHITECT, NEW ORLEANS, LA.

[Issued with the International and Imperial Editions only.]

ITALIAN CAPITALS SKETCHED BY MR. J. W. CASE, LATE HOLDER OF THE ROTCH TRAVELLING-SCHOLARSHIP.

[Issued with the International and Imperial Editions only.]

¹ It must be remarked here that mortar has greater cohesive force in proportion to the mass employed; a very thin bed of mortar is burned up (as the masons say) by the stone, and becomes a powdery layer, chipped up, without adherence, because in placing the stones these rapidly absorb the water contained in the mortar, and this drying too quickly loses its quality.

STAIRCASE TURRET OF THE CHÂTEAU, CHÂTEAUDUN, FRANCE. DRAWN BY MR. W. CAMPBELL.

DETAIL OF THE SAME. DRAWN BY MR. J. C. HALDEN.

THE UPPER TOWN AND THE CHÂTEAU, LOCHES, FRANCE. DRAWN BY MR. D. A. GREGG.

APOLLO AND THE NYMPHS IN THE BOSQUET D'APOLLON, IN THE PARK AT VERSAILLES, FRANCE. DRAWN BY MR. H. B. PENNELL.

SEE article "The Horses of Apollo," elsewhere in this issue.

[Additional Illustrations in the International Edition.]

MAIN STAIRCASE IN THE BUILDING OF THE METROPOLITAN LIFE INSURANCE COMPANY, NO. 1 MADISON AVENUE, NEW YORK, N. Y. MESSRS. N. LE BRUN & SONS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

In richness of effect, in harmony of coloring, in the choice of material and to a considerable degree in propriety and delicacy of design, the staircase-hall of this building is one of the most notable things that any American architect has accomplished, and is a better achievement than the designing of the exterior, which was published in this journal April 7, 1894, for there much of the detail seems somewhat small in scale for its actual position. Inside, the proportion seems better and though the hall is lofty, the beholder from the gallery can note that the harmonies of scale are well preserved. Although the marbles, alabasters and granite with which the hall is finished were imported, all the workmanship was performed in this country, including the Mosaic-work in the coved ceiling. A notable fact is that the marble work is all solid, not veneered.

THE HORSES OF APOLLO, BAS-RELIEF ON THE FORMER HOTEL DE ROHAN, PARIS, FRANCE. ROBERT LE LORRAIN, SCULPTOR.

[Copper-plate Etching.]

SEE article elsewhere in this issue.

THE SPHINX. DRAWN BY MR. W. W. BOSWORTH.

THE CITY BANK, LUDGATE HILL, LONDON, ENG. MR. T. E. COLL-CUIT, ARCHITECT.

THE ALLIANCE ASSURANCE OFFICES, PALL MALL, LONDON, ENG. MR. R. NORMAN SHAW, ARCHITECT.



Boston, Mass.—Exhibition of Millet's "Sower" and other Paintings loaned by Quincy A. Shaw, also, Ancient Chinese Buddhist Paintings: at the Museum of Fine Arts.

Loan Collection of Etchings by Whistler: at the St. Botolph Club, December 17 to January 3.

Exhibition of Pictures of New England, Life by New England Painters: at Jordan, Marsh & Co.'s, opened November 27.

Dielman's "Marriage of Dr. Le Baron," and Water colors by William Adam: at Williams & Everett's, 190 Boylston St., opened November 26.

Exhibition of Paintings by J. H. Hatfield: at the Boston Art Club, December 10 to 22.

CHICAGO, ILL. - Water-color Exhibition: at F. Keppel & Co.'s, 1 Van Buren Street. CLEVELAND, O. - Eighteenth Annual Exhibition of the Cleveland Art

Club: December 17 to 22.

New York, N. Y. — Thirteenth Annual Autumn Exhibition of the National Academy of Design: opens December 10, closes January 5.

Loan Exhibition: at the Metropolitan Museum of Art, New North Wing opened November 5.

Fifth Annual Exhibition of the New York Water-color Club: at the Galleries of the American Fine Arts Society, 215 West 57th Street, December 1 to 22.

Zschille Collection of Arms and Armor: at Tiffany & Co.'s, Union Square.

Square.

Exhibition of Historical Book-bindings: at the Grolier Club, December 6 to 27, also, Etchings and Drawings by Whistler, until December

Pastels after Celebrated Originals in European Galleries, by J. Wells Champney: at Knoedler's, 170 Fifth Ave., closes December 23.

Pictures by Adolph Artz: at William Macbeth's, 237 Fifth Ave.,

December 1 to 22.

December 1 to 22.

Loan Exhibition of Works by Puvis de Charannes: at the Durand-Ruel Galleries, 389 Fifth Ave., December 15 to 31.

Pictures by Elihu Vedder and Water-colors by Herbert A. Oliver: at the American Art Association Galleries, Broadway and East 23d St.

"Little Girl Pictures" by Miss Maria Brooks, and Water-colors by Dutch Artists: at H. Wunderlich & Co.'s, 808 Broadway, opened November 24.

Paintings by A. C. Howland: at the Avery Galleries, 368 Fifth Ave., December 4 to 22.

PHILADELPHIA, PA. — Sixty-fourth Annual Exhibition of the Pennsylvania Academy of Fine Arts: opens December 17, closes February 23. The special exhibition of Architectural Drawings closes February 5.



The Sutrio Baths.—The Sutro baths exceed the famous Roman baths of antiquity, in size as well as equipment. The largest of the Roman baths had about two hundred feet of frontage, to use the modern commercial terms of designation. Two of these great bathing-places might be dropped within the Sutro baths and still leave room enough for men to walk and woment to flirt. Adolph Sutro is a skifful engineer, and he enjoys solving problems in construction or breaking through difficulties in mechanics as he enjoys invigorating exercise. He designed the building over the bath, devised the plan for water-supply, invented and patented the apparatus for heating the water. The Sutro tunnels, second series, are part of his scheme of construction. With the ocean at his feet, the breakers dashing against the rocks, Mr. Sutro deemed that nature had so well provided power to send the water to the bathing tanks that artificial means would be unnecessary. Therefore, with auch noise and enthusiasm, he blasted out a basin in the solid rock. Over the edge of this basin comes the water of the huge rollers. Instead of riding the creet of the wave, Mr. Sutro traps the creet of the wave and uses it for his own purpose. From the basin the water flows through tunnels and canals, passes gates until it reaches the reservoir, where it is warmed by the Sutro patent process, and then it flows into the great tanks in the huge glass and steel building. On the road to the tanks through the canals and the tunnels the water has to pay toll of sand. Of course, it would not do to have the waves carry their load of sand into the baths, so a settling-place is provided. By automatic arrangement, also the device of Mr. Sutro, the sand is washed back into the ocean, while the water, cleared, goes on its course through the tunnels and canals to the tanks. Sometimes the tide is very low, and sometimes the ocean, even at the cliff, is quiet. There might be times when the water could not dash over the rocky wall into the basin. Artifice is employed to take the

Words of Silver. — And here is an example of Philadelphia plain talk — not in a speech, but in a newspaper; but it is just as bracing and humbug-destroying in a newspaper as it would be in a speech. How many of us here in Boston, brethren, would dare to talk in this refreshingly-saucy way of a public building which was the joy and pride of many thousands of our misguided fellow-citizens? It is from that solid, untrammelled and clean old newspaper, the Public Ledger: "The proposal to spend \$5,000, \$500 or \$5 for a ceremonial unveiling of the Penn statue on the occasion of its clevation to the crown of the tower of the Public Buildings is absurd and preposterous. It would be obviously grotesque to formally unveil a thing which has stood unveiled in a public place for years; it would be ridiculous to celebrate the elevation of this statue — which is probably as inartistic as occalled "work of art" as there is on the face of the earth — to the top of a tower — the hideous deformity of which alone renders it interesting — of a structure which is not only a monument of the crudest incongruity of architecture, but which is similarly a monument of jobbery and extravagance of such enormous proportions as to have no existing example. Is the proposed celebration intended as an honor to the Building Commission or to William Penn? The former naturally do not want a public ceremony that will again invite public attention to the fact that their work has already cost \$18,000,000, that it has been going on for a quarter of a century in increasing ugliness and extravagance will have an end. If William Penn could come to life and stand on the top of that hideous mass of stone and iron, and look down upon a public park obliterated, and the two noblest streets of his city ruined by having that architectural monstrosity, called the Public Buildings sprawling over them, he would, after his wise, honest fashion, denounce the thing itself and every one responsible for it, and for shaming his honored name by connecting him in any way wi

The Proposed Statue of Balzac, the novelist, in Paris. It will be remembered that when the project was announced there was only a tardy and illiberal response, for the sum received amounted to only 26,000 francs. A farther sum of 10,000 francs was promised when the statue was set up. The whole arrangements were entrusted to the Société des Gens de Lettres. They confided the commission, in October, 1888, to M. Chapu, the sculptor, and allowed him 5,000 francs on account. He promised to deliver the work in eighteen months. M. Chapu fell ill, and when he died, in April, 1891, the model could not be utilized. The Société gave another thousand francs to his family as a sort of compensation for withdrawing the commission. M. Rodin was next selected, who received 5,000 francs with the commission and engaged to deliver the statue in eighteen months—that is, on January 6, 1882. Another instalment of 5,000 francs was granted when applied for. M. Rodin in due course submitted a model which was not considered satisfactory. He is a realist, and as Balzac's figure was not of an heroic sort, being rotund and heavy, it would be contrary to the sculptor principles to represent the novelist as a sort of Apollo. The members of the Société were disappointed. M. Rodin endeavored to alter his model, but as his theory of art was at stake he could not go far. It seeking M. Rodin, it was natural to suppose that what was desired was a portrait of Balzac as he appeared to his contemporaries, and not an attempt to create an ideal. The sculptor was not satisfied with his changes, and in the hope that time might bring a solution, he asked for a postponement until the middle of 1895. The Société acceded, but on condition that M. Rodin return the 10,000 francs. The sculptor had no objection, but some of his friends have persuaded him that the demand was unwarranted, and must not be complied with unless under conditions which will give a litigious character to the transaction. What may happen nobody can foresee. The case almost corresponds wit

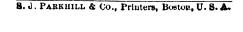
case. — The Architect.

A Tank on a Smokestack. — A novel use of a smokestack has been made at a French industrial establishment. Where an elevated tank was desired for storage of water and to give pressure, the main smokestack of the works was utilized as a pedestal, and the tank was thus elevated seventy-five feet above the ground at a minimum expense. The tank is annular in form, the inner and outer walls being concentric with the chimney and a little distance removed from it. The tank is supported on a stone sill ring built onto a brick corbel on the chimney, and is held by radial angle-iron struts. Ladders pass between the tank and the chimney and down into the tank, which has the customary supply, discharge and overflow pipes. An umbrella-shaped sheetiron roof covers the tank and probably has orifices to permit a circulation of air in summer and prevent it in winter, as it is stated that the annular air-space prevents any appreciable warming of the water from the hot gases in the chimney, while sufficient heat is received to prevent freezing in winter. The volume of the reservoir is about 3,532 cubic feet, its weight, empty, eleven tons, and one hundred twenty-two tons when full. No statement is made concerning the location of this chimney, but it would appear that where foundations are easy and ample such a utilization of a smokestack for a tank-pedestal might prove convenient and economical if the construction were not too unsightly, and if sufficient stiffness or ample guying against the possible great wind-strains is provided. — American Engineer and R. R. Journal.

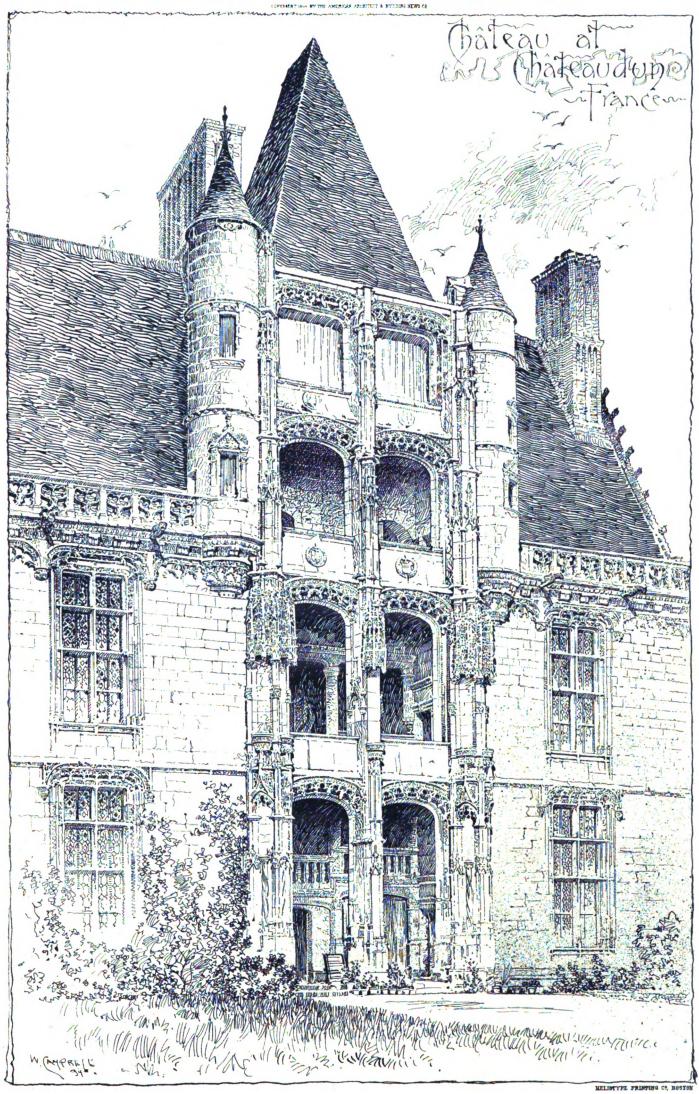
The Brothers Van der Donckt — From 1830 to 1800 for sixture.

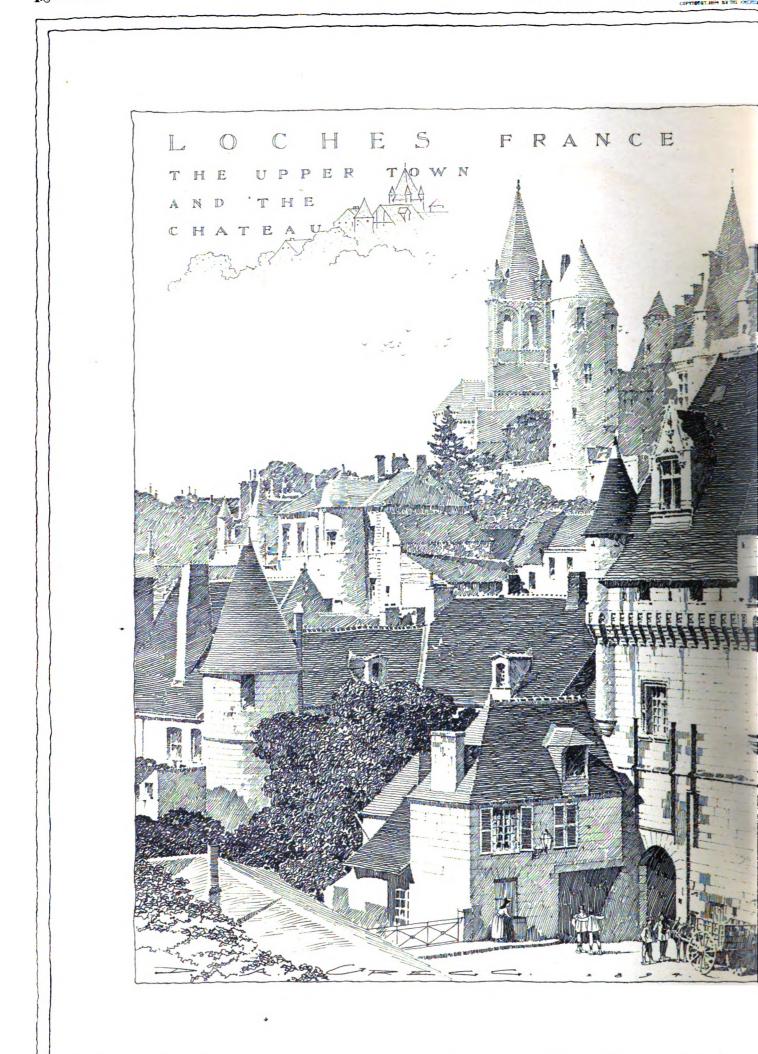
The Brothers Van der Donckt.— From 1830 to 1890 few picture-dealers were better known in both Europe and America than the brothers Francis and John Van der Donckt of Brussels and Paris. They formed part of the historical syndicate which bought the famous Millet, and under their paternal care Verbæckhoven, Madou, Clays, Willems and last, but not least, Alfred and Joseph Stevens achieved fame and fortune. The Van der Donckts exercised a predominant but unobtrusive influence on modern Belgian art, although they were rarely at home to outsiders at either of their places of business, where paintings worth several millions of francs were always to be found. Both brothers were collectors and antiquaries au bout des ongles, and they accumulated in the course of a long and successful career an immense quantity of priceless bric-à-brac, with which they adorned their private houses. Apart from pictures, they could rarely be induced to part with any of their treasures. Francis Van der Donckt died in 1892, and his brother last year. In consequence of their decease the whole of their private collection comes into the market, and MM. Le Roy of the Place du Musée, Brussels, have prepared a superb illustrated catalogue of the furniture, plate, bronzes and watches. Among the three hundred and fifty lots are some matchless antique watches, and a unique Empire dinner service reputed to be one of the finest known. — Boston Herald.

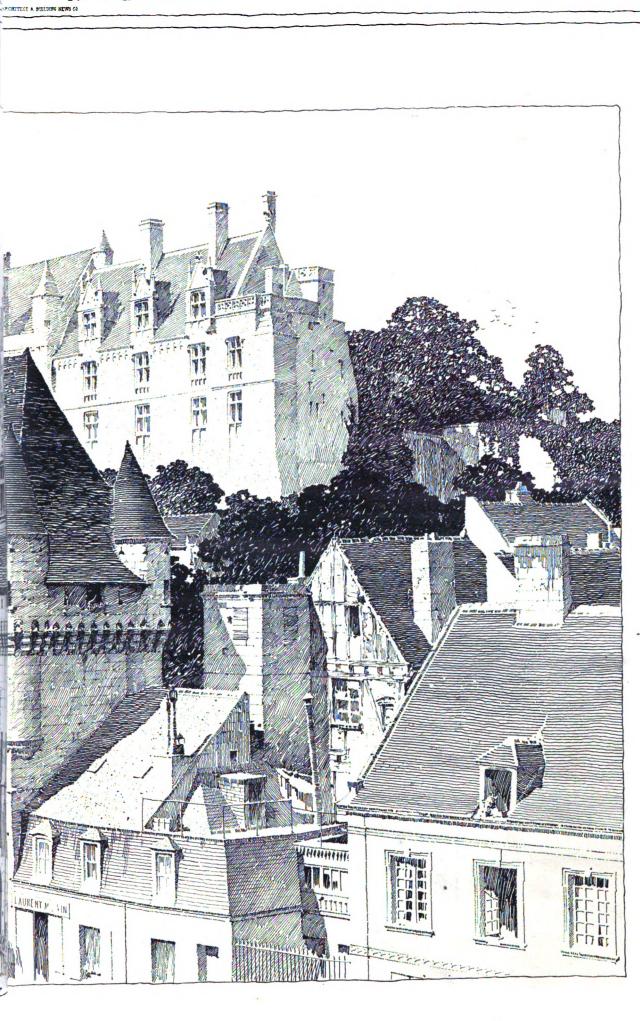
HIGH SMOKE-STACKS FOR FACTORIES. — Aside from the fact that tall chimneys are better for the public health, by lifting the deleterious product of combustion far into the upper air, it would seem that technical considerations alone might recommend them. But there has been a fad lately for low chimneys in factories, and Mr. W. B. Le Van expresses the weighty opinion that they are a mistake. As to first cost, there is no saving over a high, well-proportioned chimney, and the entire drift of manufacturing requirements demands the building of high chimneys, so as to enable more fuel to be burned in a given time and space, thus increasing the power and output of the boilers. A rapid draught is equivalent to a large fire-grate area, and has the advantage that the heat is transmitted much more rapidly to the boiler by reason of the higher temperature obtained. Moreover, in many industries, the goods produced are liable to be spoiled by smoke and smut permeatin, the lower strata of the atmosphere. — Cincinnati Commercial Gazette.



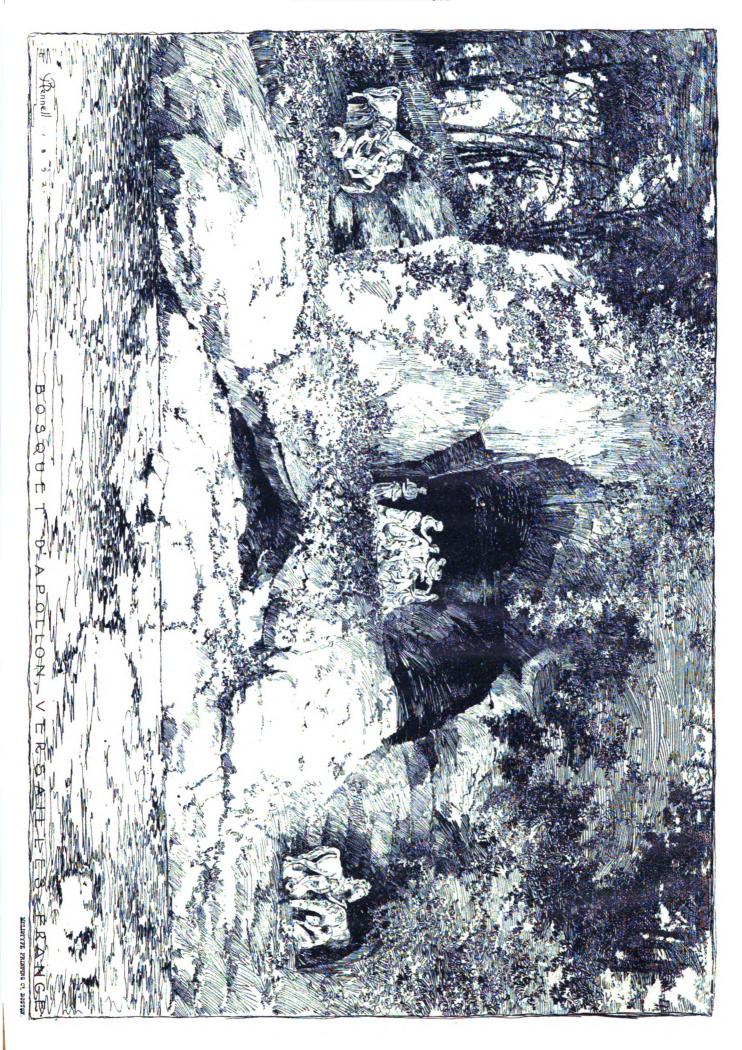
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DECEMBER 29, 1894.



SUMMARY: -

The Illustration of American Club-houses.—A Word to Subscribers in Arrears.—Apparatus for Cooling the Air of Buildings.—The Orientation of the Penn Statue on the Philadelphia City-hall.—Mr. Olmsted and the Harlem Speedway.—A German Writer on Richardson's Work.—Commercialism in Art.—Practice vs. Theory in such Matters.

The Colonial Club-house, New York, N. Y.: The Ball-room.—
The Colonial Club-house, New York, N. Y.—Plans of the
Same.—Three Interior Views of the Same.—House at
Pittsburgh, Pa.—St. John's Church, New York, N. Y.

Additional: The Colonial Club-house, New York, N. Y.: The
Billiard-room.—Dining-room of the Same.—Smoking-room of
the Same.—Library of the Same.—Bishopsgate Institute,
London, Eng.—New Presbyterian Church, Heathfield
Road, Birmingham, Eng.

IT is so difficult to overcome a fixed habit, that there is good reason for requesting our subscribers to take particular heed this year, in filling out their checks for next year's subscription, to make the payee accord with the corporation's title as expressed in the subscription bill. A little care in this respect will go a long way to minimize the trouble which will naturally fall upon the former publishers and ourselves.

WHILE we ourselves are entirely satisfied that our proposed treatment of the modern urban club-houses in this country will make the American Architect next year more than ordinarily attractive and valuable, it has seemed advisable to give to our present subscribers ocular demonstration of the manner in which, with proper support, this very interesting topic can be treated. It is our hope that the effect of this premonitory publication will be not only to secure the continued support of our present subscribers, but will also lead many of the subscribers to the two less-expensive editions to subscribe during the following year for the International Edition, in which, of course, the greatest number of these interesting illustrations are to be published. The subject illustrated this week, the "Colonial Club," was not selected as exhibiting particularly attractive features, but is made use of simply because the requisite amount of material came to hand earlier than that for other buildings. We feel that the illustrations this week are merely typical and fairly represent what will be found to be the average of the year's work. The topic selected offers an unusual opportunity to surpass any results we have as yet accomplished and with the proper support from the profession our previous record can be and will be surpassed. Whether this will be the result, time must show. The matter rests absolutely with the individual members of the profession. If the hard times have treated them so harshly that they cannot afford to join hands with us in accomplishing a really fine result, we and they must be content with achieving merely a good average result and mourn over a lost opportunity.

PROPOS of hard times, we desire to say publicly to subscribers who have not even yet paid their subscription for the year just closing, that the aggregate of such unpaid dues is a very large sum and its absence from our bank account has been a serious check on our operations this year. Knowing that this is due wholly to the hard times, we have been quite unwilling to put disagreeable pressure upon men who in the past have paid their dues with promptness, year after year. At the same time, each temporarily embarrassed subscriber should remember that his enforced dilatoriness, of little consequence as a single case, becomes a very serious matter when hundreds of other subscribers ask us to be equally considerate in dealing with them. We can understand how it revolts an old subscriber to have to make two bites at such a very small

cherry as a subscription to this journal, but though appreciating the unpalatableness of the suggestion we must ask these subscribers who are in arrears to pay something on account, however little, if they still find themselves unable to pay in full.

means of freezing apparatus, has been revived in New York, and the usual paragraphs are going the rounds of the newspapers in regard to a cooling plant just set up in Twenty-third Street, New York. It must be something like fifteen years since the air of the Madison Square Theatre was artificially cooled in summer, by passing it over ice; and refrigerating apparatus is in use in every large city in the civilized world, for cooling rooms for the storage of provisions. Many attempts have been made to introduce refrigerating apparatus, of the same sort as that used in the cold-storage buildings, into dwelling-houses, but they have failed, and with reason, to please the public. The apparatus now attracting the attention of the newspaper reporters is simply an ammonia-machine, depending for its frigorific properties on the alternate condensation and expansion of ammonia gas. To judge from the accounts, the apparatus is, as a piece of machinery, well designed, but the descriptions of the methods by which it is intended to convey the chilling influence to the rooms of a dwelling are rather amusing. We are told, by way of introduction, that the use of ice for cooling rooms causes "dampness," while the ammonia apparatus produces "a pure, dry cold." It is hardly necessary to say that the facts are just the other way. When warm air, which, in inhabited buildings, is always moist air, is passed over ice, after the Madison Square plan, the moisture of the air is condensed by the reduction of temperature, and deposited on the ice, to be carried away with the drainage-water from the ice; and the air which passes beyond the ice is not only cool, but comparatively dry, as its moisture has been, so to speak, wrung out of it by the ice. With pipes filled with ammonia-chilled liquid, running through the room to be cooled, the case is reversed. All the moisture originally contained in the air remains in the room. Such air as comes in contact with the cold pipes will deposit its moisture in the form of drops of water, which will either fall on the floor, or must be collected in some way and drained off; while the remaining air will be held at the point of saturation. A more unwholesome atmospheric condition it would be difficult to conceive, than the reeking, dripping, chilly dampness of a room to which such a cooling system had been applied. It is amusing to read that it is proposed to make the cooling system ornamental, by suspending "heat-absorbers," or bunches of pipes carrying the cold liquid, from the ceilings of rooms, like chandeliers. An interesting feature of this scheme would be that the water condensed from the atmosphere would drop from these "heat-absorbers" in showers, as soon as the apparatus began to work, very much to the detriment of furniture or ball dresses beneath.

CURIOUS controversy has arisen in regard to the colossal 1 statue of William Penn, which now crowns the tower of the City Building in Philadelphia. Soon after it was put up, the Commissioners in charge of the building received a letter from the sculptor of the figure, Mr. Alexander Calder, saying that the statue was designed, and always intended, to face the south, while it had been put up facing northwards, to the serious detriment of its effect. The Commissioners, according to the Philadelphia papers, received this communication with an attentive courtesy which contrasts very agreeably with the indifference often shown by such bodies toward their professional advisers. The designs for the building were consulted, and it was found that, from the beginning, the figure of Penn was shown facing north, toward what is, and probably always will be, the most important front of the building. So far as any of the Commissioners could remember, the subject of changing the position of the statue had never been mentioned in the meetings of the Board. There is no question that a statue of this sort, standing in the open air, ought to be modelled with regard to the direction in which the sunlight will fall upon it, and it would certainly be a misfortune to have such a statue face in the direction opposite to that for which it was designed; but, if a suitable aspect for the statue, as executed, cannot be secured without sacrificing other important considerations, it is for the Commission to judge on which side the greater advantage lies. However, the sensible observation was made by one of the Commissioners that, when the bright metal covering is put on the tower, the glare reflected from it will materially alter the effect of the statue, and Mr. Calder's letter was placed on file for future consideration.

THE question of the engagement of Mr. Olmsted, as landscape architect of the Harlem Speedway, has been solved by his absolute refusal to have anything to do with the matter. It will be remembered that he declined to consider the proposition made to him except on condition that he was to be associated with Mr. Vaux, the regular landscape architect to the Park Commission; and later, when he discovered that the view held by the Commissioners was that the Speedway should be laid out by engineers, and that the landscape architect should be called in only to "ornament" the engineers' work, he withdrew altogether, on the very reasonable ground that the statute providing for the construction of the Speedway, by assigning the direction of the work to the Park Commissioners, intended to assimilate it to the Park work, as a piece of landscape art, for which its character, as a pleasure drive, winding along the rocky shore of the Harlem River, certainly adapted it; and that to hand the designing of it over to railroad engineers, bringing in the landscape artists afterwards to apply such decoration as they could, was compatible neither with the dignity of his profession, nor with his interpretation of the law. Mr. Olmsted is tolerably well known to New York people by his conscientious independence, but, in this instance, he is sure to carry public opinion with him. Independent of the merits of the question, the point, which he makes in his letter to the Commission, that, if the Legislature had wanted the Speedway to be an engineering work, it would have put it into the hands of the Commission of Public Works, rather than the Park Commission, is very well taken; and we hope that the Commissioners may be induced to reflect whether their own misapprehension of the service which the people of New York, through their representatives, have selected them to perform, may not have as large a part in their troubles with their land-scape architects as the desire to "antagonize" them, which they think they have discovered in the latter.

THE writer of the thoughtful and discriminating articles in the Deutsche Rangeltone the Deutsche Bauzeitung on "Architecture in North America" has, in a recent number, some observations on Richardson and the Richardsonian style which have much interest. After observing that, until within the last thirty years, American architecture was practically a reflection of that practised at the time in Europe, particularly in England, he says that, "While among us, in the seventies, the Ger-"man Renaissance succeeded the Italian, to be followed in its "turn by Baroque and Rococo fashions, another element ap-"peared in America, which soon reached an epoch-making "importance, and put an end to the further parallel march of "American with European architecture. . . . This new ele-"ment, which, offering itself as something fresh, picturesque, "and different from the familiar European models, was re-"ceived everywhere with enthusiasm, was the 'Modern Ro-"manesque,' which Henry Richardson first formed out of Romanesque motives, particularly from those of Norman "and Provençal buildings. . . . Short as was Richardson's "career, it was yet sufficient to revolutionize the architecture of

"private buildings in America.

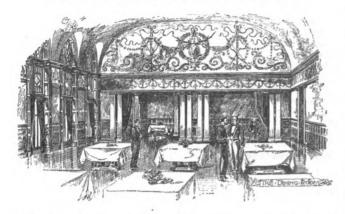
"So exaggerated is it," the writer goes on to say, "to call "Richardson a second Michelangelo, as an English contemporary has done, one receives nevertheless, in looking at his buildings, an involuntary impression that they are the creation of a powerful and self-conscious artist-nature. . . . It "was already twilight," he continues, "as I, one evening, wandered through some rather deserted streets in the City of Chicago. Suddenly, I stood before a building which chained me to the spot by its majesty and defiant power. Mighty "red granite blocks, fifteen feet long and three feet high, "formed the base, and on these smaller blocks, roughly projecting, piled themselves seven stories high, leaving between "them windows and window-groups, fifteen feet wide, and massing themselves at the angles into piers sixteen or seventeen feet in width. Without knowing that I was standing opposite the Marshall Field building, erected from Richard-

"son's sketch, the impression came over me:—so would a "Florentine of the fifteenth century have solved the problem of designing a seven-story mercantile building."

HE Builder for December 8 contains an editorial, in its best style, on "Commercialism in Art," in which it exposes sharply the ignorance, to call it by no worse name, of the people who spend so much time in glorifying the imaginary "mediæval workman," at the expense of the modern architect. One of these, Mr. W. B. Richmond, in a recent address before a Church Congress, at Exeter, informed his audience that the modern habit of working for a given compensation was the ruin of art, and that it was this system which made the art of our day so inferior to that of the Middle Ages. "Carvings," he said, "were now made to order, and run out cheaply from those in stock"; and he advised his hearers to go to Assisi, Santa Maria Novella, York, Tewkesbury, Rome, Verona, Orvieto, Wells, Venice, Lincoln or Exeter, and try to persuade themselves, if they could, that the work there was designed by architects, and turned out by the trade. It is hardly necessary to say that Mr. William Morris chimes in with all this, and informs us that, far from being "commercial," "an artist ought not to expect to be paid for high-class art work, but ought to consider himself sufficiently paid by the pleasure he derives from a noble work, and should only look for payment when he is doing what is disagreeable or repulsive."

THE people in this country who have paid Mr. Morris's bills for the specimens of his mark for the specimens of his work which have come here, will, we imagine, be filled with remorse at the tortures which he must have endured while executing their commissions; but, lest they should be too hastily condemned, it may be well to suggest that a part of the superhuman agony reflected in his statements of account may have been due to the practice which is here commonly attributed to him, of "running out orders cheaply from stock"; a practice which, however lacerating to the sensibilities of an artist who soars above the coarse modern commercialism, was certainly not imposed upon him by his American customers. As to the assertions of the rest of the æsthetic English school, that the mediæval cathedrals were built without the design or supervision of architects, by the cooperation of a number of journeymen, who worked for the love of Art, we need not say that they have been proved over and over again to be pure nonsense, and are now rarely put forth except before Church Congresses, and other audiences of sentimental and simple-minded people. Not only were the mediæval cathedrals, after church architecture was taken out of the hands of the monks, probably always designed by architects, who were paid to design and superintend them, just as our architects are paid to design and superintend churches, but in a great number of cases, the names of these architects are known, with a good deal of their personal history, including the terms of their contracts with their employers; and several of their working-drawings have come down to Again, as to the sinfulness of "turning out from stock" duplicates of carvings, or other portions of work, it is well known that this was a common mediæval practice. Mr. Ruskin gives an interesting description of the way in which Venetian window-heads were "turned out from stock." fitted together at the building; and the Builder mentions some curious examples of absolute similarity between pieces of mediæval work, as the reredoses at Xanten, in Germany, and St. Germain l'Auxerrois, in Paris, which must have been carved from the same design; and various Flemish reredoses, which have every appearance of having been furnished "from stock" by a single manufacturer. The notion, again, that a true artist works without pay, is just as unfounded as the others. Some great painter once said that a man never did the best work he was capable of until starvation was the alternative; and the whole history of art shows that the best painting, the best sculpture, and the best architecture, have been done to earn money. Of course, we do not say that an artist who is trying to earn a living cannot forget himself in the inspiration of his work; on the contrary, the man who sets himself at his painting or designing with the strongest conviction of the necessity for doing his best is most likely to warm into self-forgetful enthusiasm; and it is just this enthusiasm which makes the difference between the professional, or paid artist, and the amateur.

THE COLONIAL CLUB, NEW YORK, N. Y.



III HE Colonial Club, situated at the southwest corner of Seventysecond Street and the Bonlevard, was arrived. HE Colonial Club, situated at the southwest corner of Seventysecond Street and the Boulevard, was originally incorporated
in April, 1889, under the name of "The Occident Club of New
York"; and in the certificate of incorporation, we learn that "the
object of the Club shall be to promote social intercourse among its
members, and to provide them with a Club-house."

How well this latter aim has been accomplished, we have endeavmed to suggest in the accompanying photographs and sketches.

ored to suggest in the accompanying photographs and sketches.

The growth of the upper "west side" of the city is almost phe-

nominal in its extent and importance.

The so recently shanty-covered district is now built up with rows of interesting residences, apartment-houses, hotels and churches, so many of which have contributed as subjects for illustration to the

pages of this journal.

The needs of a social club of the foregoing character were strongly indicated, and to Mr. Henry F. Kilburn, himself a dweller in this West Side City (for there is a strong local feeling here prevalent), was given the "amalgamating of their needs and their ideas into a concrete unit"; rather, we should say, into a brick and stone unit.

As will be seen from the sketches, the building is designed in a

character warranting the change of name, and though George Washington might be somewhat surprised, were he set down before it and told that it is accredited in style to his era, still, according to our modern usage of the term, it is sufficiently "Colonial." The exterior finely indicates the purposes of the building, as well as the distribution

finely indicates the purposes of the building, as well as the distribution of the interior; its most conspicuous feature, both within and without, being the charming assembly-hall or ball-room on the second floor—approached by a very effective stairway opposite the front entrance. At the head of the first flight is a Tiffany window, quite expressive of the Club—Antony Van Corlear sits jovial, surrounded by laughing maidens, who fill his glass and flatter his bachelor vanity, while in the tablets on either side we read the tale, as set forth in the "Knickerbocker's History":

the "Knickerbocker's History

"But it was a moving sight To see ye buxom lasses; How they hung about ye Doughty Antony Van Corlear; For he was a jolly rosy-faced Lusty bachelor Fond of his joke and withal A desperate rogue among ye women!"

A humorous and pleasing thing to greet one on entering the Club!

Billiard and smoking rooms flank the entrance-hall, with café conveniently sequestered in the rear. On the side street, the ladies' entrance gives easy access to the elevator, by which we reach their reception-room and restaurant, and the large restaurant on the third floor and the sleeping-apartments above, to which are given over the rooms on the fourth and fifth stories, "so that gentlemen over the rooms on the fourth and fifth stories, "so that gentlemen when they're hout late and don't want to go 'ome, can come in 'ere and spend the night," as we were informed by the hall-boy; — perhaps a contrast between "use and wont" and the purpose for which they were originally intended. Conveniently arranged, cleverly planned and successfully adapted, the building certainly is; and a very fair example to which to refer for others of its kind.

The ladies are well provided for, with their own café and anterooms. The library is supplied with attractive and readable books of varied character; the concert-hall, by its height through two stories, gives opportunity for card and committee rooms in the mezzanine; there are bowling-alleys unusually well planned in the

zanine; there are bowling-alleys unusually well planned in the basement. The building is perfectly heated and ventilated throughout by the Sturtevant-blower system, lighted by its own dynamos and its refrigerators "frozen" by its own freezing-machine. The kitchen and servants' living and working quarters are in the top of the house at the rear, with lifts and elevator convenient for service.

The decorations everywhere are light and delicate in character;

the rooms all uncommonly well-proportioned, with much variety in shape, and pleasing color; in the ball-room the ornamentation is composition-work gilded on white ground, with silk hangings of red and white and yellow at the windows and on the walls.

Burlaps, with stencilled patterns applied, are much used as wallcoverings, while some of the rooms are treated in embossed papers and the billiard-room is simply painted in a warm brown with gold ornaments, the woodwork being of oak.

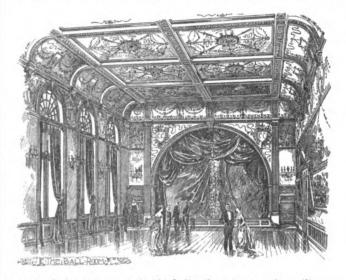
The stucco floriations in the restaurant are left in pure white on

the white ground, the carpet, chairs and hangings giving color to the

general effect.

As a whole, the building exhibits an unusual variety of treatment, but the effect is entirely congruous and agreeable, clearly indicating much good judgment in its directing.

One interesting feature is the ingenious designing of the light fixtures, which in a number of the rooms are managed as a truss, with pendants and connecting rods, thus making a unit in effect,



instead of the common individual distribution over the ceiling, so often conflicting with the desired spacing below. Those in the billard-room and café are especially amusing in their effect, being made of heavy iron bars and leaf-work.

The mantelpieces throughout deserve much credit for their quiet

The mantelpieces throughout deserve much credit for their quiet and dignified treatment, though always ornamental and handsome.

The fireplaces are all stacked with genuine hard-wood logs, which, more to say, are frequently lighted—a relief from the encroaching use of gas—in the fireplaces.

The fixed furniture is equally quiet and ornamental; where there is carving, it is, in truth, carving! and always of good design.

The floors are strewn with handsome rugs, and there is an air about the place which says: "Aimez! ce, que vous trouvez; parce que c'est ce que vous voulez."

Each room in the club seems to demand its separate description.

Each room in the club seems to demand its separate description, though perhaps it is as well to let the photographs tell their own

The rooms at night are full of the busy New York men-of-affairs, and at stated intervals the club is thrown open for receptions or entertainments, when all are enthusiastic in admiration of its artistic and practical arrangements.

In its exterior it has a conspicuous point to carry, standing as it does at the crossing of so many streets, but does it well!

Pleasing in color, with its light buff brick and gray stone, its

broad contrasting openings and effective ironwork, it makes one feel like saying, as a Frenchman would say:
"Je vous félicite, Mr. Kilburn."



PAINTINGS. — THE ELEVATED RAILROADS. — THE DESPERATE STRIKE AT THE MARQUETTE. — REVISION OF STREET NAMES. THE PAYMENT OF THE COUNTY ARCHITECT.

OME space in last month's letter was devoted to a description of the scheme which was being pushed by one of our architects and a certain firm of contractors. The firm and architect seemed to have furnished mutual inspiration for each other, and the plan as put before the public and as chronicled in our last letter, lacked few features to make it most seductive and alluring. As before mentioned, all that was needed for the further execution of the plan was the permission of the public to issue five million dollars' worth of bonds, that being the sum needed for the execution of the ideal scheme. Unfortunately for the promoters, the public has remained obdurate, and the defeat of the issuance of the bonds at this fall election has given the enterprise its death-blow, thus depriving the county of a magnificent structure, which, if the estimates were correct, it was eventually to receive for nothing. Such is the action of an ungrateful public. The matter consequently seems to have been brought to a conclusion, and consequently this chapter is a closed one, but the need for a new building being undoubtedly a real one, the discussion which the subject has received will probably hasten a reconsideration of the matter, even if under a different form.

There was also mentioned last month the seventh annual exhibi-There was also mentioned last month the seventh annual exhibition of American painters, now being held at the Art Institute, and the opening on the reception-night of the Field Memorial Room, the decoration of which has been designed and executed by Tiffany. The general feeling of color is that of dull green and black, though suggestions of pale yellow and pink are introduced. The floor is a beautifully-laid mosaic, of which the design hardly seems in keeping with the rich material used. A good deal of that green stone so affected by decorators, and which in reality is but a species of silver ore, is introduced here, as well as around the fireplace, and is evidently used where malachite would have been used in Russian work. dently used where malachite would have been used in Russian work, for the design has a strongly Muscovite flavor. The woodwork is all very beautifully-finished ebony, and the trims of the doors, as well as the chair-rail at the top of the wainscoting, are inlaid with checkered design of mother-of-pearl. The walls, above the wainscoting as ered design of mother-of-pearl. The walls, above the wainscoting as high as the turned ebony picture-rail, are covered with dull green velour, while from this, the walls up to the skylight are freesced in tracery, which does not seem entirely Russian in character, on a ground-work shading up from dull green to the dull yellow before spoken of. The way the two colors are blended is not entirely successful, for it gives the walls a dirty smoky appearance, unwelcome to the eye of the experienced Chicagoan. The glory of the room is the beautiful stained-glass screen which is suspended over the entire centre, some ten feet below the actual skylight, and in which the three prevailing colors, buff, green and dull pink, are the entire centre, some ten feet below the actual skylight, and in which the three prevailing colors, buff, green and dull pink, are most successfully blended in an artistic design. Vieing with this, as an attractive object in the room, is the fireplace, in the central portion of which, in mosaics, are the words, "In memory of Henry Field," and the date. As a background for the letters, as well as in the setting of the fireplace, golden-brown mosaics are introduced. The effect of the uncut stones, so often introduced with semi-bar-The effect of the uncut stones, so often introduced with semi-barbaric richness in Russian decoration, is here obtained, the feature being introduced both in the capitals of the columns and the mouldings of the mantel. As would be expected, all details are carefully attended to. The settees have woodwork of ebony and are covered with green leather, while the steam radiator is carefully hidden behind black grill-work. Viewed superficially, the room is charming; taken critically, the design, if intended to be Russian in character, somehow fails in giving one the impression of that semi-barbaric but strong and inborn artistic feeling, which is in so much of the work of Russian designers. It is a delight to see that a beginning is being made here towards really artistic interior decoration. For those who made here towards really artistic interior decoration. are less ambitious and do not aspire to have their work done by so well known a firm as Tiffany's, there are several designers here, both men and women, who do very excellent work. Still, it is difficult for architects to persuade clients that money spent for really excellent designs and colors in decoration is well spent, and as yet it is disdesigns and colors in decoration is well spent, and as yet it is discouraging to note that the person well grounded in the principles of design gets little, in fact no, more work than the person who is able to scatter around a few garlands with an occasional butterfly or cupid thrown in. Of course, the smoky atmosphere which invades and ruins everything here in Chicago is naturally a very serious drawback to putting any very fine decoration on our houses or public buildings. Still, viewing the lack of appreciation as leniently as we will, we must admit that the same amount of money which in rooms is often given to the upholsterer, could, if given to a designer, result in no more perishable work, and be something which, to the educated eye, would be a delight. But time, it is to be hoped, will help to cure this fault.

American art, as far as painting is concerned, is fast following in the footsteps of the French, if the collection at present at the Art Institute is a typical one, and it undoubtedly is. The examples of impressionism here displayed are weird and unreal in the extreme, bewildering, while they attract. To those who do not entirely believe in the doctrine of the impressionists and illuminists, it will be interesting to note whether such pictures as come from the brush of Alexander and Dannet will, in the next twenty years, be raised to that high position which rests on the pinnacle of fame, or be elevated—to the lumber-room of some, at present, scantily-furnished attic. It can easily be understood and admitted that, when once a taste for the illuminists' pictures is acquired, none others will seem satisfying. It is reported that a number of the pictures here on view for the first time are to be sent directly from here to the Salon next year, the question of their acceptance not needing to be considered, as their authors are hors concours. If this be really true, Chicago may indeed feel that she is an art centre.

There are many people living in the city proper who hardly realize what a network of rapid transit our elevated roads will soon spread around and above us. There is, first, the elevated road known as the Alley Elevated, leading south, which, patronized as it was during the World's Fair, made its existence a very thoroughly acknowledged fact. Second, there is the Lake Street Elevated,

which has been in operation for about a year and which leads out on to the West Side. Third, the Metropolitan Elevated, which is now nearing completion, will lead on to the West Side, while the fourth in number will be the Northwestern Elevated, which will run through the North Side, and has for its final destination the North Shore suburbs. The suburbs will probably for the present be reached by a connecting electric line. This road is well organized, and work will be begun in all probability during the coming year. The great trouble with all the elevated roads heretofore has been the fact that it was necessary for them to land their patrons on almost the outskirts of the business district. This inconvenience is now to be obviated by what is to be known as the joint down-town loop, in which the four elevated roads unite, and in this way obtain a passage through the centre of the city. The proposed road for which the piers are already being put up will run north on Wabash Avenue from Harrison Street to Lake Street, west on Lake Street to Market, south on Market to Van Buren, east on Van Buren to Pacific Avenue, south on this street to Harrison, where it again runs east and completes the loop at Wabash Avenue. This route makes connection with all four elevated roads, and enables them to run their trains directly upon the track, thus in the circuit most successfully taking in the down-town district. The chief condition which the owners of property abutting on the loop make is that the locomotives shall be run by electricity rather than steam. The loop will serve as a most convenient mode of transfer from one railway-station to another for travellers, as with really no exception all the stations are either passed by it, or are within a block's walk. These systems of elevated roads mean more to the growth of Chicago than almost anything else could, as with slow modes of transits her outlying districts are too far from the centre of the city to be available.

A very curious as well as a very sanguinary strike has be

A very curious as well as a very sanguinary strike has been going on in one of our large buildings, the "Marquette." This time the chief issue lies not between the union and non-union men, but principally issue lies not between the union and non-union men, but principally between the men of the union, pure and simple, and those union men who belong to the Building-Trades Council. The strike was first declared "on," on the tenth of October, the cause being the fact that the Chicago Edison Company tried to put men to work on the building who were not members of the Building-Trades Council. There had been a fight of several years' standing between the Edison men and those of the Electrical Workers' Union, and wherever these men attempted to work with men of the Building-Trades Council, a men attempted to work with men of the Building-Irades Council, a fight would be the result. Consequently, the first day that the men of the Edison Company went to work on the Marquette the fight began at once. Three hundred men were waiting outside the building when the workmen were to stop their work, the walking-delegates having given permission to finish whatever jobs would suffer by delay. When these were accomplished, nine hundred men struck work. Among the men were twelve of the Edison laborers and they were attacked kicked down stairs and generally roughly handled were attacked, kicked down stairs and generally roughly handled. This part of the strike, which lasted only a few days, was terminated by the Edison people removing all their men from the job who refused to join the Building-Trades Council. The electrical work was rused to join the Building Trades Council. The electrical work was postponed and the other departments hurried along, but as soon as the Edison work was taken up again, the strike was declared on once more. Workmen were not only attacked on the Marquette, but on all jobs where they were sent by the Company. The main thing seemed to be to attack the men, and handle them as roughly as possible. One man after forfaiting his hand them. as possible. One man after forfeiting his bond three times, when finally arrested, drew his revolver on the detective and threatened to shoot him. By the time the second strike was declared the contractors had had over two hundred applications from first-class workmen, and this force they gradually increased on the building till they had four hundred men employed. It was then that the walking-delegates realized the strike was practically lost, and redoubled their efforts to attack and terrorize the workmen. The first serious, or rather fatal, catastrophe was the shooting of the Vice-President of the Junior Plumbers' Association on October 10. This man, Doyle by name, was shot by a young workman in self-defense while he was trying to protect an old man, who had been very roughly handled by the delegates a few days before, on arriving at or leaving the building. When the grand jury refused to indict the man for murder, the anger of the delegates knew no bounds, and the height of the troubled times was reached. Altogether, there have been over fifty cases of assault during the strike, and the first of the month the second shooting occurred. Never in the history of similar strikes in the city has there been one carried on with such desperate hate and brutal determination. Men, who at the beginning of the winter season do not want to give up their work and expose of the winter season, do not want to give up their work, and expose of the winter season, do not want to give up their work, and expose their families to want and privation, have to carry on their labors armed, as if the building were in a state of siege, and a trip outside its walls is as dangerous as would be a sally into an enemy's country. The attacking party have been resorting to more desperate means, and the workmen becoming more determined. The contractors have tried to protect their employés in every possible way, having, among other things, engaged an attorney to prosecute the cases brought against the men who are arrested for assault and battery, or to defend the cases which are brought against the workmen under the charge of carrying concealed weapons and shooting their assailants in self-defense. Altogether, it has been an ugly warfare, and one where public sympathy has been entirely on the side of the workmen employed by the contractors.

December 10, at a meeting of the union plumbers, the strike was

As is so often the case, the result gained has apparently been chiefly broken limbs, smashed heads and pounded bodies, and, in this special case, two men sent to Calvary, or some other last resting-place, where the strikers cease from troubling. There are more than four hundred men employed on the building, ninety-five per cent of which belong to the union. Two of the men, who were held by a coroner's jury on a charge of murder after the last shooting affray, have been admitted to bail in bonds of ten thousand each, the bondsmen being members of the firm of contractors. One other man was held on the same charge, but was released to the same charge. on a two-thousand-dollar bail.

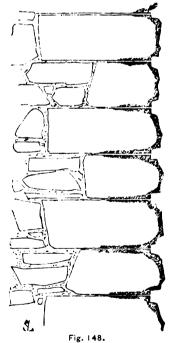
Some time ago a committee was appointed to consider the re-naming of streets, which were duplicated throughout the city. It is now making its final report, and one feels in looking it over that the city has grown very rapidly; otherwise, such a tangle of repeated names would not have existed, as well as the long list of those belonging to the "no-name series." The committee discovered that seven hunthe "no-name series." The committee discovered that seven hundred and sixteen names had been duplicated from one to sixteen times. There were also many streets, which being broken into short sections by undivided blocks, bore different names on each section. This, with the streets which bore no names at all, gave rise to much The committee has been through the entire list of city streets, taking from it the duplicate names and superfluous ones, and adding to it four thousand new ones, although the discarded remnants were frugally picked up and used over again. In all, the names of about five thousand five hundred streets were changed. It appears to be no meagre task which the committee have had on hand, as the report will cover two hundred sheets of large-sized

paper.

In connection with the appointment of county architect for Cook County for the year 1895, the following resolution was passed:

Resolved, That the compensation of the county architect for the year 1895 shall be as follows: Five per cent commission on work done under his supervision until the sum actually paid out or contracted for by the County shall amount to one hundred thousand dollars, and two and a half per cent for all work done under his supervision in excess of one hundred thousand. The above commission to be paid only on work actually done, and to include the mission to be paid only on work actually done, and to include the architect's compensation for drawing all plans and preparing specifications for all work, whether the same shall be used or not; and further, that all plans and specifications for county work become the property of Cook County.

CONSTRUCTION.1 - XXIX.



NDER Philip the Bold, and Philip the Fair, military constructions fell back constructions fell back toward antique traditions. We have seen how the constructors of the Château of Enguerrand III, at Coucy, adopted for the towers a thick exterior cylindrical envelope, and that they used on the in-terior a rather light treatment to carry vaults or flooring, their slender piers enclosing between them cells arched over with pointed vaults; they seem thus to wish to reconcile the necessities of defence with the new methods of building introduced by the non-ecclesiastical architects of the early part of the thirteenth century. If in religious and civil constructions, these novel principles, developed at the outset of this article, never cease to progress and develop themselves into abuse and affectation, it was not the same with military construc-tions; the architects came back to simpler designs, to a more ho-

mogeneous system of construction. At every step we are thus obliged to come to a stop in the study of the art of building of the artists of the Middle Ages and to start out on a new road; for the logical art bends itself to every exigency, to all the necessities which arise, without ever attempting to impose a routine. At the very moment when we see religious edifices exclude the semicircular arch and the art of construction abandon itself to an excess of affectation in churches, it returns in military constructions to the severest forms, to the concrete, passive system of building, to the principles, in short, so well developed by the Romans. The fortifications of the City of Carcassonne, built at the end of the thirteenth century and the beginning of the fourteenth, give us a striking example of this revolution.

As we shall have occasion to present in the "Dictionnaire," a

large part of the principal schemes and details of these fortifications,2 we will here limit ourselves to giving the general plans and details of one of the most important defences of this enclosure, in order to show our readers what the art of military construction had become

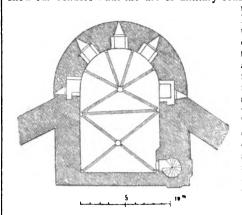


Fig. 149. Tour du Tresau, Carcassone.

under Philip the Bold. We will choose the principal tower of this enclosure, the tower called du Trésau, which yields in no respect to the finest antique structions with which we are acquainted. This tower defends one of the projections of the inner enclo-sure. It is constructed in accordance with the system explained in our Figure 142 (G), that is to say its two stories above the exterior ground-line are made

up, on the side exposed to attack, of niches included between the interior buttresses, niches at the extremity of which are pierced loop-holes which command the exterior. Between stories these niches buttress one another like those in the tower of the Château of Coucy. The grade-line of the fortification is seven metres above the exterior grade. Figure 149 gives the plan of the tower du Trésau, on the level of the lowest story (the cellar for those within the fortifications) on the same level as the outside grade. Under this story there was a cellar excavated in the rock faced with masonry and vaulted, access down to which was given by the cylindrical stair-case in the corner of the tower. The second story (Fig. 150) is raised

a few steps above the level of the ground of the city. This ground-floor and this second story (groundfloor for those within the fortification) are vaulted by means of transverse arches, wall-arches and diagonal arches followagonal arches follow-ing the Gothic method. The sec-ond story (Fig. 150) possesses a fireplace G, a door opening on the parade a lodge the parade, a lodge for the officer in charge, and privies F, corbelled over the

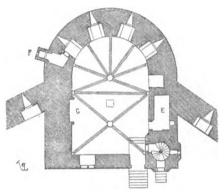


Fig. 150. Tour du Tresau, Carcassone.

F, corbelled over the outside. The third story (second for those within the city) has walls unbroken on the outside so as to strongly bind together the lower construction, whose circular wall (Fig. 151) is pierced with buttressed niches and loop-holes; this story is floored over. The fourth story (Fig. 152) represents an uncovered chemin de ronde A, and in the centre a garret lighted by two windows in the gable wall D. In addition to the staircase B, which rises from below, there is also, starting from the chemin de ronde a garrent stringer B', both of them accorded the chemin de ronde, a second staircase B'; both of them ascend as far as the top of the two watch-towers which flank the gable D. Standing with your back to the gable on the flooring of the groundfloor (Fig. 149), and looking outwardly, we see (Fig. 153) what is

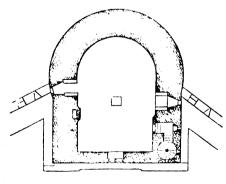


Fig. 151. Tous du Tresau, Carcassone.

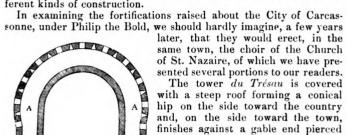
the interior construction of this tower. We suppose the vault separating the lower from the second story demolished so as to show the disposition of the interior niches forming loop-holes, alternating and car-rying solids over voids in order to command all points of the horizon withof the horizon without and also to cut the piers and avoid vertical ruptures, conformably to the system adopted in

The simplicity of this conthe towers of Coucy, explained above. struction, its solidity, the care with which the faces are finished with beautiful cut stone, both within and without, well indicate the attention which the architects of the end of the thirteenth century gave

¹ From the "Dictionnaire raisonné de l'Architecture Française," by M. Viollet-le-Due, Government Architect, Inspector-General of Diocesan Editices, trans-lated by George Martin Huss, Architect. Continued from No. 991, page 131.

² See also the "Archives des Monum. Hist.," issued under the auspices of the Ministry of State, by the Commission des Monuments Historiques. (Gide, publisher.)

to the execution of these constructions, how they sacrificed all for the needs of defence, how they knew when to yield their methods to different kinds of construction.



D Fig. 152.

B

and, on the side toward the town, finishes against a gable end pierced with windows lighting the various stories. If we make a transverse section of the tower looking at the gable end, we have Figure 154.

In examining the plans, we see that this gable wall has but little thickness relative to its beight. But on this relative to its height. But, on this side, it is necessary only to close up the gorge of the tower and this wall

the gorge of the tower and this wall is, moreover solidly maintained in its vertical plane by the two watch-towers FF, which by their base and their weight present two points of support of great solidity. The junction of the roof with the gable is well sheltered by these steps, which form parapet-walls on the interior face and which facilitate the inspection of the higher portions of the tower. The roofing (the steepness of which is indicated by the dotted line IK) rests upon the two supports K, absolutely separating the chemin de ronde F from the central apartment. At the level of the rampart, the chemin de ronde G encircles the construction on the side of the city, whose grade is at CD, as that without is at AB. on the side of the city, whose grade is at CD, as that without is at AB.

Moreover, the care employed in making a general plan of these military edifices is manifested even in the least details. We notice everywhere the indications of a keen observation and a consummate experience. So without enlarging too much upon the details which

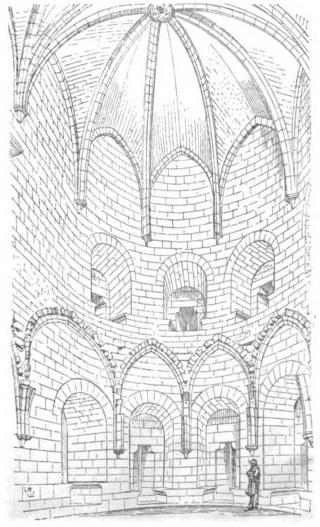


Fig. 153. Tour du Tresau, Carcassone.

have their place in the articles of the "Dictionnaire" we shall limit ourselves to pointing out one of the interior dispositions of the structure of the fortifications of Carcassone at the end of the thirteenth century. Some of the towers, the most exposed to the efforts of the

besieger, are provided on their anterior part with projecting beaks intended to keep the pioneers at a distance and to offer a strong resistance to the blows of the battering ram. Notice, then, in this

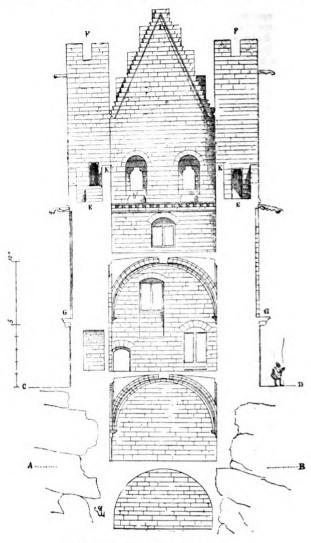


Fig. 154. Tour du Tresau. Carcassone.

particular case how the bonding of the courses is arranged (Fig.

The joints of the stones on the anterior portion of the tower are not drawn normal to the curve, but at an angle of 45° relatively to the axis AB; so that the action of the battering ram on the projecting beak (the most projecting and consequently the most attackable point) is neutralized by the direction of these joints, which carry off the effect of the blows to the junction points of the tower with the neighboring walls. If the besieger employs sappers after having

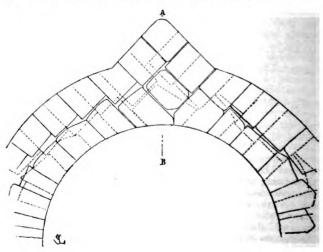
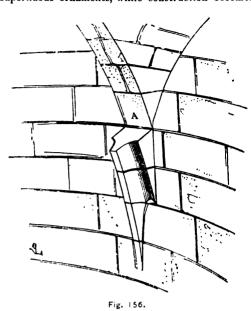


Fig. 155.

undermined the beak or even beyond it, he strikes joints in the masonry which do not lead him to the centre of the tower, but give him a long and severe task, for he has to lift out with a crow-bar every block which runs obliquely, and he cannot dislodge them as easily as if they were cut wedge shaped. In our diagram we have indicated the bonding of two courses by full and dotted lines.

While civil and religious architecture loads itself down with superfluous ornaments, while construction becomes more and more



refined during the fourteenth and fifteenth centuries, mili-tary construction, on the contrary, uses each day safer methods, simpler means of obtaining greater resistance. The military construction of the end of the fourteenth century and the beginning of the fifteenth, universally employs semicircular and segmental arches; the bonding is done with particular care; the masonry of the rough walls is

excellent and they are well filled-in, which is rare in religious constructions. All useless expense is avoided. Thus, for instance, the arches of the vaults which, in the thirteenth century and again in the fourteenth are carried upon corbels, penetrate into the walls, as Figure 156 shows.¹

The skew-backs of the transverse arch are enveloped in the courses of the interior facing of the tower. There are no more wall-arches: with good reason this member was considered superfluous. The first voussoir A of the haunches of the arch is cut upon the face of the wall; a simple groove cut into this wall receives the other stones which form the spandrels of the vaults. While the details of construction grow simple and less expensive, the bonding becomes better, the materials are better chosen, with regard to the place which they are to occupy; the facings are finished with extreme care which they are to occupy; the facings are initiated with extreme care even down to the foundations, for it is essential to leave no point of vantage for the work of the miner. If rock is built upon, it is benched off with all the finish usually given to the bedding of cutstone; if the rock presents irregularities, fissures, they are made good with good courses. At all points there is recognizable that watchfulness, that attention, that scrupulousness, which are, among constructions, the usual evident signs of a very perfect art, a systematic method.

Modern artillery cut short the architects at the moment when they had pushed to its utmost limits the theory and the practice of military construction. As opposed to this, these refinements of defence became useless; it was necessary to offer to this new means of destruction enormous masses of masonry or earthworks. cannon knocked over the covered parapets and cunningly devised machicolations, threw down the ramparts by undermining them at the bottom and put a stop to the employment of those ingenious combinations contrived to resist attack at close quarters. Nevertheless, such was the strength of many of the fortresses of the fourteenth and fifteenth centuries that systematic sieges have frequently been and inteenth centuries that systematic steges have frequently been required to make a breech into and reduce them. In order not to extend any further this already very long article, we refer our readers for the study of the details of fortification in the Middle Ages, to the words Architecture militaire, Boulevard, Château, Courtine, Créneau, Donjon, Echauguette, Machicoulis, Porte, Siège, Tour.

[The end.]

SOCIETIES.

SOCIETY OF BEAUX-ARTS ARCHITECTS.—COMPETITION NO. 2.2—PROGRAMME "A" (For Advanced Scholars).—A CUSTOM-HOUSE FOR A PORT OF ENTRY.

THE city is situated at the head of navigation of a considerable river, and the Costombouse which is a considerable river, and the Custom house, which is besides the principal structure of the municipality, is to be erected upon the river bank, preceded by modern stone quays and a spacious square.

The building should contain a vast hall serving as public vestibule

and giving access to the following groups of offices, viz:

The office of the Collector of the Port, with private office and stenographer's room; Deputy Collector's office, Withdrawal Entry room and Bond room

The Department of Entrance and Clearance of Vessels.

century.

This competition is open to all students of architecture. Conditions of judgment and jury to be arranged by the committee.

The Department for the Registry of Merchandise.

shier's offices with correspondence-room, etc. Convenient to these Departments, but somewhat removed from the space devoted to the general public, a large area should be devoted to the purposes of a depot, fitted with every convenience for the reception, examination and discharge of goods. Retiring rooms, toilet-rooms, etc., will demand suitable provision.

The plot reserved for the erection of this monument, which should

The plot reserved for the erection of this monument, which should impress more by a certain classic dignity and severity than by richness of decoration, measures 150 feet parallel with the river, by 250 feet at right angles with this front, and is open on all sides.

The plan, including the arrangement of the square, quays and adjoining streets, is to be rendered at a scale of \(\frac{1}{2}'' \) to the foot; the section at the same scale; and the façade, showing the elevation of the quays, etc., at a scale of \(\frac{1}{2}'' \) to the foot.

The drawings to be rendered in wash with cost shedows and

The drawings to be rendered in wash with cast shadows and mounted on stretchers with paper margins, but no frames.

Drawings to be delivered on or before March 18, 1895, at 1478

Broadway, and to be addressed to Mr. Marbury Maccafferty.

The Medal, First, Second and Third Mentions will be awarded to

the competitors under this programme in order of merit. Each competitor will make a study of his general scheme in plan and elevation at the scale of $\frac{1}{16}$ " to the foot and mail a free-hand tracing of the same, dated and signed, to Mr. John M. Carrère, 44 Broadway, on or before noon of December 27, 1894. Only those who furnish such sketches can enter the competition, and the drawings submitted by them in the competition will have to conform to the general outline and scheme shown on the sketch. Any radical departure therefrom will debar the competitor from participation in

the rewards, though not from general criticism.
[Signed],
JOHN M. CARI JOHN M. CARRÈRE. Committee ERNEST FLAGG. JOHN G. HOWARD. | Education.

COMPETITION NO. 2.2 - PROGRAMME "B" (For Beginners). - A DISTRICT SCHOOL FOR BOYS.

This building, which is to be constructed either entirely of stone or of stone combined with brick, will be one of a series built by the suburb of a county town in the outlying region of its territory.

The site reserved is a nearly level tract with a frontage of 100 feet on the high road and extending back 150 feet, and is surrounded on three sides by adjoining properties. The school-house proper should provide accommodation for four classes of about 20 pupils each, arranged either in one or two stories. In addition to these principal rooms there should be two small retiring-rooms for the teachers, and a space set aside for a reference library: also ample principal rooms there should be two small retiring-rooms for the teachers, and a space set aside for a reference library; also ample toilet-rooms and cloak-rooms. Many of the scholars come from some distance and bring their luncheon, and a generous covered play-ground should be provided for them as well as for the games at recess and the noon-hour in bad weather. This light and airy structure should be of easy and immediate access from the school-house proper, though, if thought fit, it may be placed somewhat apart in another part of the grounds.

The principal building should not exceed a width of sixty feet in front.

The plan is to be rendered, showing the arrangement of the entire property, at a scale of \(\frac{1}{2}'' \) to the foot; the section at the same scale, and the elevation at a scale of \(\frac{1}{2}'' \) to the foot; also a drawing of detail at a scale of \(3'' \) to the foot.

The drawings to be rendered in wash with cast shadows and

The drawings to be rendered in wash with cast shadows and mounted on stretchers with paper margins, but no frames.

Drawings to be delivered on or before February 18, 1895, at 1473 Broadway, and to be addressed to Mr. Marbury Maccafferty.

No Medal, but only First, Second and Third Mentions will be awarded to the competitors under this programme in order of merit. Each competitor will make a study of his general scheme in plan and elevation at the scale of 18" to the foot and mail a free-hand tracing of the same, dated and signed, to Mr. John M. Carrère, 44 Broadway, on or before noon of December 27, 1894. Only those who furnish such sketches can enter the competition and the drawings submitted by them in the competition will have to conform to ings submitted by them in the competition will have to conform to the general outline and scheme shown on the sketch. Any radical departure therefrom will debar the competitor from participation in the rewards, though not from general criticism.

JOHN M. CARRÈRE. | Committee ERNEST FLAGG. | on JOHN G. HOWARD. | Education. [Signed],

ILLUSTRATIONS

[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

THE COLONIAL CLUB-HOUSE, NEW YORK, N. Y.: THE BALL-ROOM. MR. HENRY F. KILBURN, ARCHITECT, NEW YORK, N. Y. [Gelatine Print issued with International and Imperial Editions only.]

THE COLONIAL CLUB-HOUSE, NEW YORK, N. Y., MR. HENRY F. KILBURN, ARCHITECT, NEW YORK, N. Y.

A LARGER view of this building was published in the American Architect for December 10, 1892.

¹ From the towers of the Château de Pierrefonds; beginning of the fifteenth

PLANS OF THE SAME.

THE site secured on the Southwest corner of the Boulevard and Seventy-second Street is the most suitable which could be found by the Club, being at the intersection of the principal avenue and the the Club, being at the intersection of the principal avenue and the most prominent residence street on the west side of the city. It has a frontage of 115'3" on the Boulevard, and 44'11" on Seventy-second Street. The rear line, parallel with Seventy-second Street, is 88'8". Upon this corner, within view of the historic site from which Washington directed the march of his army from Long Island, and of the walls within which Hamilton died, the Club has built treated a home which is some and so for as discount to the contract of the contra itself a home, which in name and, so far as circumstances permit, in appearance recalls these and many other relics of the Revolution and of the early years of the Republic, which have already vanished or are fast disappearing. It is the aim of the Club to perpetuate the memory of those days and to preserve such relics as may be committed to its care.

The cost of the site was \$85,000. It was expected that the build-The cost of the site was \$55,000. It was expected that the bilding could be erected for \$225,000, and that the total expense, with furniture and equipments, would be about \$325,000. How far this expectation was realized is not stated, but one fact is significant: whatever the building-fund amounted to, the cost of the building including the architect's commission was less by \$1,200 than the Club

had made preparation to pay.

The appearance and arrangement of the club-house are shown by the accompanying illustrations. The material is gray limestone up to the second floor, and above that, long, thin, gray brick with white terra-cotta trimmings, except for the top story, which is entirely of terra-cotta, and finished with a rich balustrade of the same material.

As the height is limited to eighty feet, and it was desired to obtain as much space as possible, a flat roof of brick was built so that it might be used as a summer garden and observatory.

In the sub-basement beneath the bowling-alleys, are the elevator and electric-lighting machinery, refrigerating apparatus, steam boilers and fans for heating and ventilating the building. Particular attention has been paid to the last feature.

A separate entrance, with outside steps to the basement, is provided at the southern end of the building for the use of servants and the delivery of stores. A large dumb-waiter runs from near this entrance to the top of the building, also a fireproof stairway, with

communication at each story.

Connecting with the main entrance on the Boulevard side, is a deep vestibule opening into a wide hall, in the rear of which is placed a double stairway with broad landings, lighted by large windows and extending from the basement to the roof of the building. Back of this stairway, and well screened from view, are a lavatory and a telephone closet.

The ladies' entrance on the Seventy-second Street side is connected with the main hall by a hall seven feet wide, at the end of which, and connecting also with the main hall, is placed a large ele-

vator, running from the basement to the roof.

vator, running from the basement to the roof.

The office is on the south side of the main hall, near the entrance, and beyond it is a billiard-room, 42' x 32'. At the southern end of this room is a raised platform with a large fireplace, and beyond this is a barber-shop. Back of the billiard-room is a café, with a large open fireplace. Connecting with this on the south is the buffet, and on the north adjoining the main hall, a coat-room of ample dimensions.

On the right of the main entrance is a smoking-room of oval shape, 38' x 24', with broad windows upon both the Boulevard and Seventy-second Street.

In the second story, over the billiard-room, is an assembly-room or ball-room, 32' x 66' and 25' in height. It has a musicians' platform and dressing-rooms at the southern end, and a balcony at the

form and dressing-rooms at the southern end, and a balcony at the northern end, in the mezzanine story.

Over the smoking-room, and of the same size and shape, is the library, communicating with which is a writing-room. In the rear of the assembly-room are a card-room, serving room and lavatories.

In consequence of the height of the assembly-room, the remainder of the story not occupied by its upper part is a mezzanine story, in which there are three rooms over the library, and cloak-rooms, card-rooms and lavatories back of the assembly-room.

The dining-rooms are on the third floor, and consist of a main

The dining-rooms are on the third floor, and consist of a main dining-room, 32' x 38' and 20' feet high, and four private dining-rooms at the ends, so arranged that they can be thrown into the main room when required. The ladies' dining-room is above the

main room when required. The ladies' dining-room is above the library, and of the same size as that and the smoking-room.

The windows of all the dining-rooms extend down to the floor, and open upon the balcony. Back of the main dining-room are serving-rooms, pantries, lavatories, etc., and back of the ladies' dining-room are a ladies' reception-room, toilet-room, etc.

In the second mezzanine story, which is the result of the height of the main dining-room, are the kitchen, pantries, store-rooms, etc. These are separated from the rest of the building by brick walls and fireproof floors. In this story are three servants' bed-rooms, and some chambers along the Seventy-second Street side, for the use of members. members.

In the fourth or top story are ten suites of apartments for members, each consisting of a parlor and bed-room, with a bath-room, lighted and ventilated by a skylight. These parlors have windows overlooking the Boulevard and Seventy-second Street. In the rear

of these apartments, over the kitchen, are the laundry, pastry kitchen, pantries, store-rooms, servants' bath-room, etc.

THREE INTERIOR VIEWS IN THE SAME.

HOUSE FOR DANIEL BRADY, ESQ., PITTSBURGH, PA. MESSRS. BARTBERGER & EAST, ARCHITECTS, PITTSBURGH, PA.

ST. JOHN'S CHURCH, VARICK STREET, NEW YORK, N. Y. THIS sketch, by Mr. F. R. Hirsh, received Honorable Mention at the exhibition.

[Additional Illustrations in the International Edition.]

THE COLONIAL CLUB-HOUSE, NEW YORK, N. Y.: THE BILLIARD-ROOM. MR. HENRY F. KILBURN, ARCHITECT, NEW YORK, N. Y. [Gelatine Print.]

SEE article elsewhere in this issue.

DINING-ROOM OF THE SAME. [Gelatine Print.]

SMOKING-ROOM OF THE SAME. [Gelatine Print.]

> LIBRARY OF THE SAME. [Gelatine Print.]

BISHOPSGATE INSTITUTE, LONDON, ENG. MR. C. HARRISON TOWN-SEND, ARCHITECT.

THE elevation of the principal entrance (in Bishopsgate Street) has been carried out in light-yellow terra-cotta. Above this entrance are the board-room and the clerks' offices.

The Institute has also side and back entrances in Brushfield Street and Duke Street, the frontages of which have been carried

out in red brick with dressings of terra-cotta.

For general access a corridor runs the whole length of the buildings, and to insure perfect quiet and convenience to the public the library and reading rooms have been placed as far as possible from the traffic of Bishopsgate Street, and are also cut off from the hall by another corridor.

The floors of the corridors and vestibules are of marble mosaic set

n red cement. The floors of the library and hall are laid with patent oak block flooring and are of fireproof construction.

The stairs to the library and board-room are of solid teak. The hall, 80 feet long, 48 feet wide and 42 feet high, will seat about 500 people. The exit doors, 10 feet wide, each open immediately into thoroughfares, and are so arranged that the whole audience could, in case of panic, easily quit the building within two or three minutes. In addition to the high clerestory windows, a toplight is provided with a view to the hall being occasionally used for exhibitions of paintings, etc. The platform is provided with ample means of exit and with dressing-rooms and other accommodation. Space has also been provided at the back of the platform for an organ, to be blown

by hydraulic power.

The lending library, director's-room and reference-library on the ground-floor are 15 feet 6 inches high. The height of the reading-room on the first floor is 15 feet. The basement is very commodious

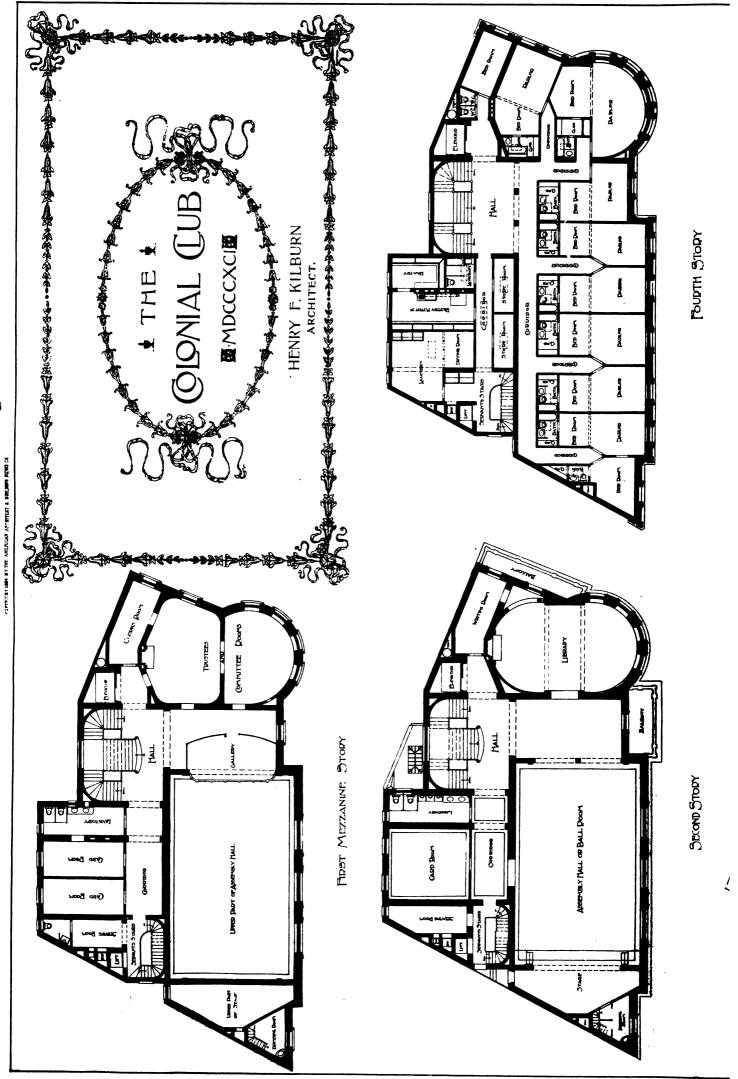
and well ventilated.

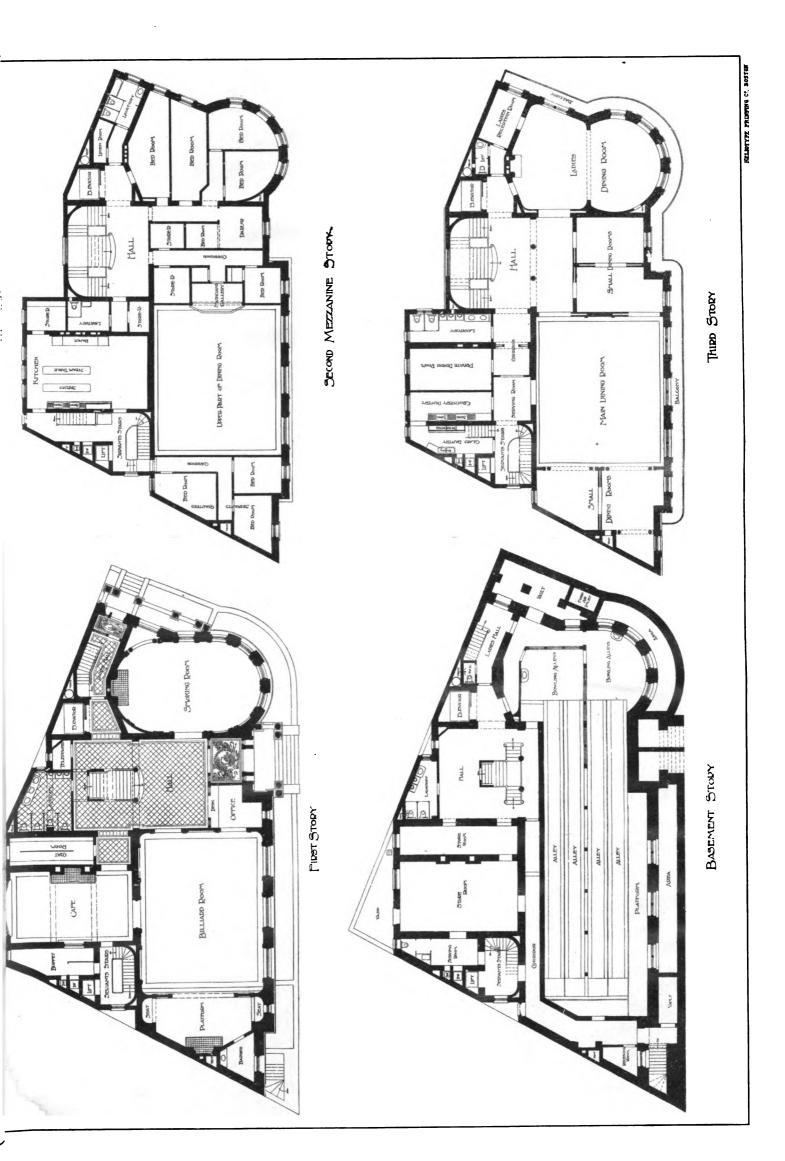
The foundations are in concrete, carried down to the natural gravel, and the outer area and basement walls are constructed of solid brickwork, faced on the exterior with Seyssel asphalte. In excavating the site a number of interesting curiosities were discovered at a depth of about 15 feet from the ground-level. These comprise coins, bones, a skull and specimens of pottery of the Elizabethan and other periods.

NEW PRESBYTERIAN CHURCH, HEATHFIELD ROAD, BIRMINGHAM. ENG. MR. JOHN P. OSBORNE, ARCHITECT.

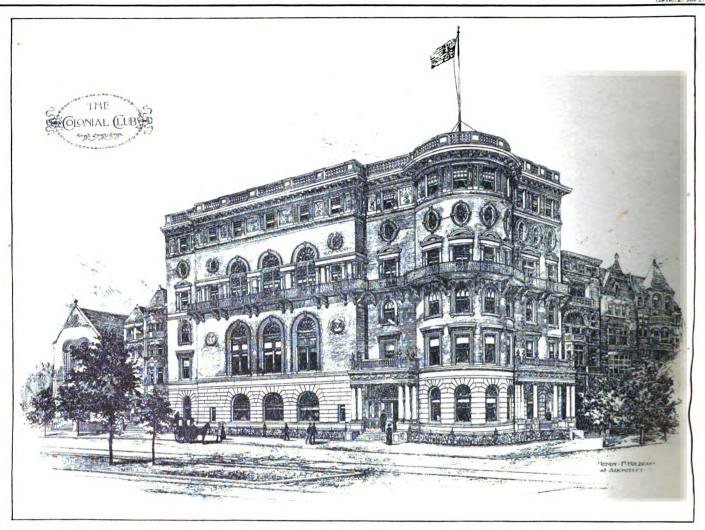
This building is about to be erected on the Heathfield Estate, Handsworth, Eng. The seating accommodation is about 400. In addition to the rooms shown on the sketch-plan, there is choir vestry, kitchen and heating-chamber. The exterior will be faced with red bricks with Hollington-stone dressings, the internal dressings being of Bath stone. The roofs are covered with best pressed red tiles.

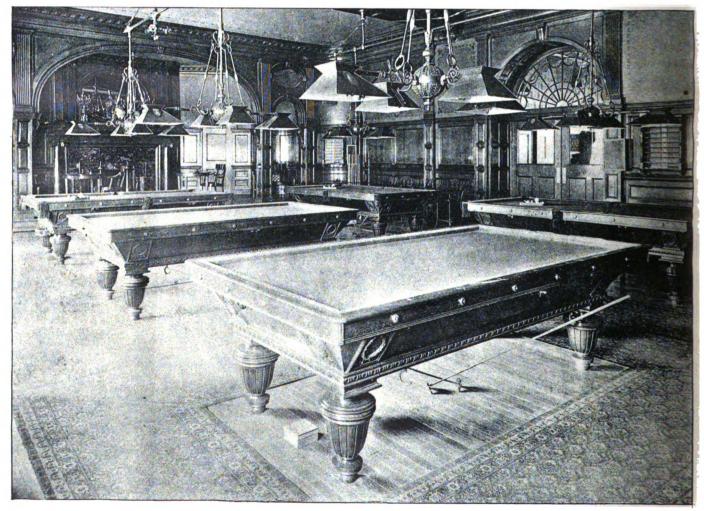
A Perfect House unearthed Near Pompeii.—A valuable discovery has been made at Pianella-Setteimini, near Pompeii, on the property of a certain Mr. Vincent de Prosco. A house has been unearthed which was covered at the time the city was buried, and it is said to be in a more perfect condition than any building yet discovered. It contains several large apartments, and three bath-rooms with the basins in sculptured marble, and with leaden pipes ornamented with bronze faucets. "The three rooms correspond," says a writer, in describing the discovery "to the calidarium, tepidarium and frigidarium, which were always to be found in ancient houses of the first class. In consequence of the eruption of Vesuvius in A. D. 79, the Pompeiian houses brought to light heretofore have been roofless, almost without exception. Fortunately, however, that on the property of M. de Prosco is perfect, and archæologists are happy over that fact. The roof measures almost forty-four feet in length."—N. Y. Tribune. A PERFECT HOUSE UNEARTHED NEAR POMPEH. - A valuable dis-

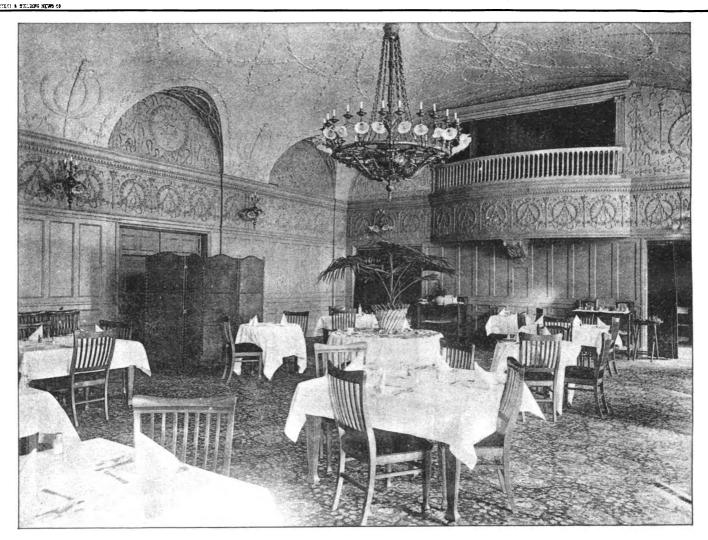








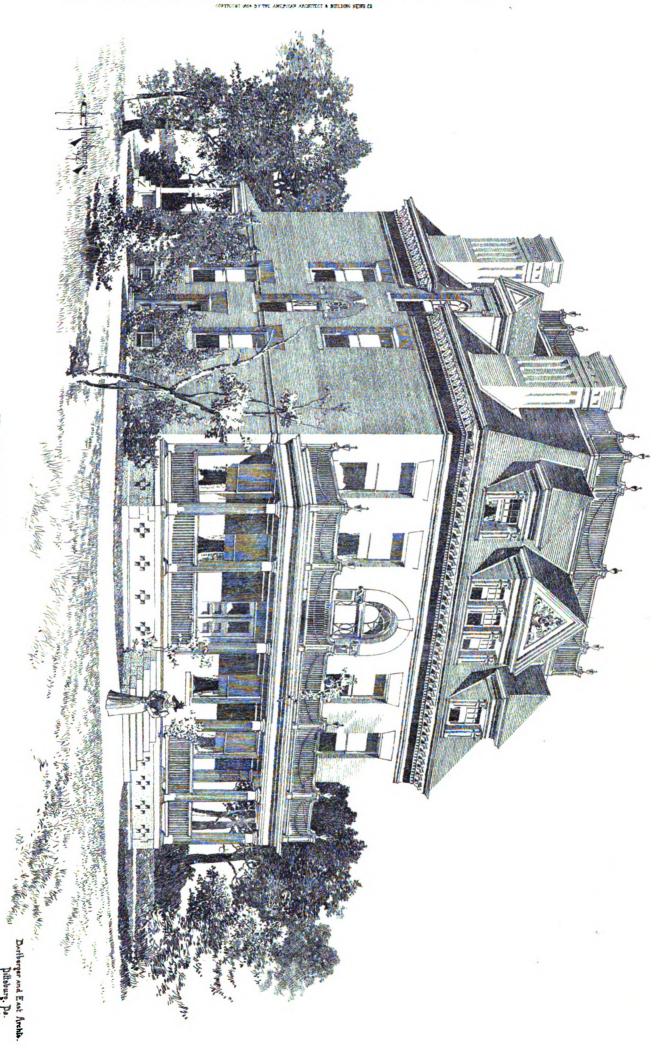






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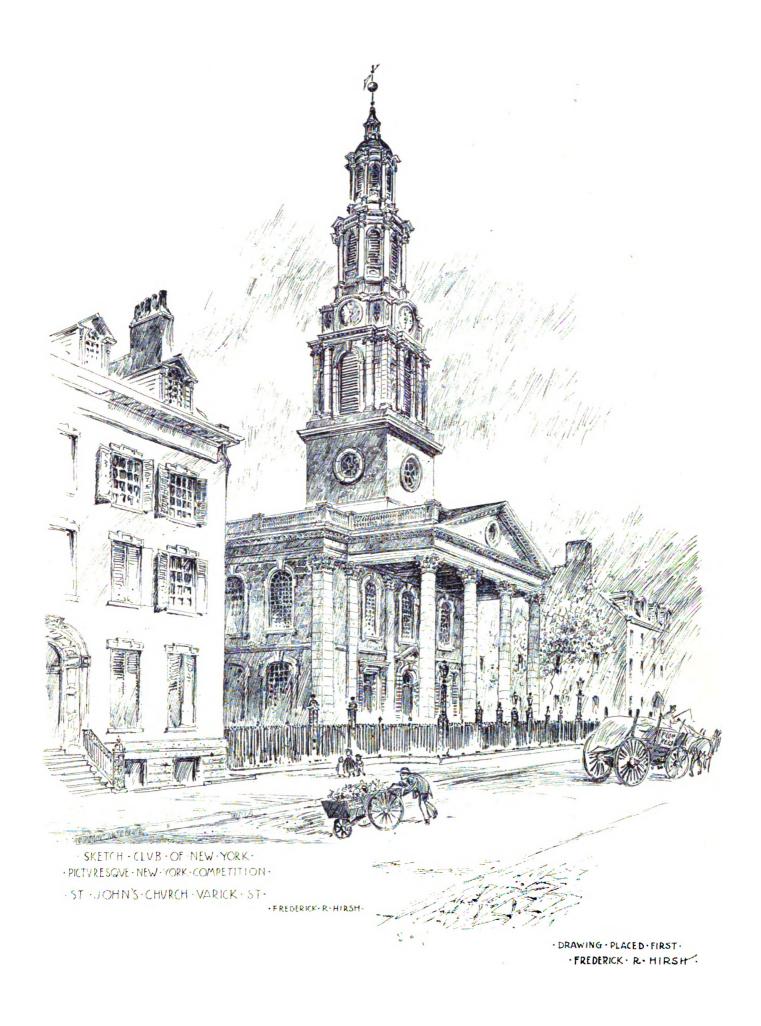


RESIDENCE FOR
MR. DANIEL BRADY, Pillsburg. PA

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HELIOTYPE PRINTING C' BOSTON

TRADE SUPPLEMENT. ADVERTISERS'

No. 145.

SATURDAY, JULY 7, 1894.

WATER-CLOSET SEAT.

THE well-known firm of Haines, Jones & Cadbury Co., of Philadelphia, have recently devised a most unique and valuable watercloset seat attachment known as the "Albo" detachable seat. This Company is fully in accord with the idea that "all open" fixtures are not only the most sanitary, but the most satisfactory, and they also fully appreciate the fact that fixtures should be made so that they can be readily taken apart for cleaning or repairs. As applied to a closet, we find these ideas embodied in the "Albo" seat. As shown in the accompanying illustration, the earthenware bowl is made with two

allows of an "all open" space at the back between closet and wall, thus giving free access around the bowl at all times. The seat itself is made of the best seasoned hard wood, and is warranted not to split or warp. It is neat in design, and the general effect of a water-closet fixture is greatly enhanced by the "Albo" seat, the appearance of which is a vast improvement on the old style seat, lid and back. There is still another feature of the "Albo" seat which places it in a class by itself, far in advance of any other watercloset seat. It is detachable. By simply putting the seat in a vertical position at right angles to the earthenware and gently lifting, the seat can be detached, and you are free to rection in which heat will move water is in a

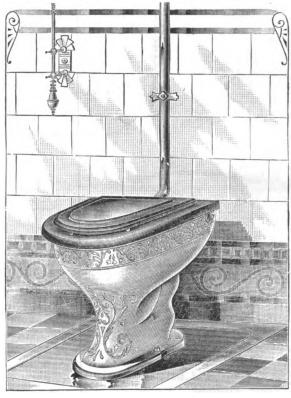
they are not going to kill it by putting the price so high that no one can buy it. The 14" " Albo " seat made in oak, antique oak, walnut, ash, cherry, both natural and stained, is to be listed at \$8.25. The "Albo" seat used in connection with their "Hajoca" Syphonjet Closet shown in the accompanying cuts, makes an outfit which we believe has no

> HAINES, JONES & CADBURY CO., PHILADELPHIA, PA.

THE WILKS HOT-WATER HEATERS AND STEAM GENERATORS.

IT is an established fact that the only di



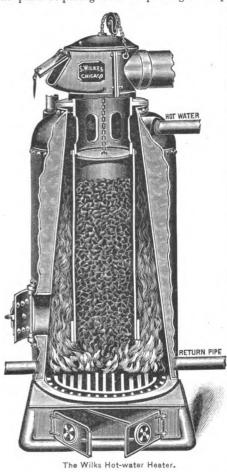


small oval holes at the back of the closet, which extend down into the earthenware about one inch. These holes are made larger at the bottom than at the top. Into them are placed brass trunnions fitted with special springs. When the trunnions are placed in the closet, the springs expand and the seat is held firmly and securely in place. The construction of this seat is very simple, and it will not get out of order. It gives promise of being the most popular seat ever offered to the trade. With the "Albo" detachable seat they not only do away with the unnecessary dirt-absorbing woodwork at back of closet, but also present a seat in every way

wash all parts of the closet without any hindrance whatever. This we think is a very valuable feature, and will recommend the seat to every thoughtful person, but it will be especially appreciated by those who have the oversight of closets in public places and large institutions, where the closet should be thoroughly cleaned every day. When closets are placed in marble or slate stalls, the seat can be detached, and washed from a hose turned on the closet without fear of damaging its woodwork. Any of the H. J. & C. Co.'s closet specialites can be had with this seat attachment. Architects will be glad to see and feel like congratulating the firm on the fact that while they a perfect sanitary success. The "Albo" have a very superior seat in the "Albo," large heating-surface. These heaters being

vertical direction and as soon as the particles of water become heated, they strive to move up and out of the top of the boiler, to make room for the cooler and heavier particles, and ascend and descend naturally in vertical lines. Water in horizontal spaces will hardly move away from the fire at all, except as it is forced out by currents in adjoining vertical spaces. The form of the Wilks Heaters gives the greatest vertical space and height and is all upright. The inner cylinder being coneshaped and in connection with openings all around the top of the chamber of the magazine, giving the fire the greatest contact with the water all around the boiler, and a very

made of steel which can be so much lighter and, at the same time, stronger than cast-iron, as the thicker the metal the more heat is required to heat the same quantity of water through it, besides the great liability of castiron to crack by the great strain of expansion and contraction. Cast-iron water-heaters are a failure, as it is not a safe or proper material to make boilers of. The Wilks Heaters have no coils or pipes to fill up and to be kept tight, or horizontal sections on which the water, although it may heat, lies dormant; it seems as if this was as near the right form of a hotwater heater as can be made, giving the largest results of hot water for heating for amount of fuel consumed, with the greatest simplicity and durability in construction, with no parts requiring bolts or packing to keep



tight or fail when most needed, being as strongly riveted and calked as any locomotive

These heaters have been made in nearly their present shape for more than twenty years. Some of the late improvements have been more in improving the construction and material of the heaters under the direction of the present manager, Mr. E. H. Sedgwick, who is a practical mechanic of many years' experience in boiler-work, etc., than any great change in the form of the boilers. These heaters have in the past been more generally known and used in heating water for dwellings, apartment-buildings, hotels and bathhouses, etc.; recently the Company have been generally introducing them for heating buildings, etc., of all kinds, with great success. And in larger buildings it has been found both economical and practical, instead of using one large boiler or heater, to yoke two smaller hot-water heaters together, then early in fall and in the spring and moderate weather only one heater will be required, making a great saving in fuel, etc. In extreme weather it is but little more trouble to fire two or more heaters as required; the same plan is being adopted in many large steam plants

pany are making all sizes of heaters from ten inches to four feet in diameter and for all purposes for which heat or hot water is required. The steam generators are constructed on the same principle as the hotwater heaters for all purposes for steam, power-cooking, heating, etc.

Will be glad to give any information required, and to send catalogue on application.

S. WILKS MFG. CO., CHICAGO, ILL.

LUBRICATING PULLEY BLOCKS.

THE following is a record of service-tests of hoisting tackle recently made by Robert Grimshaw, M. E., at the Brooklyn Navy Yard, in collaboration with Lieut. John A. Bell, of the Equipment Bureau, United States Navy: --

The tests were for the purpose of determining the percentage of power wasted by unlubricated blocks. For this purpose we procured a four-fold tackle which had been lying by a long time, the bearing surfaces

fected to represent the work of one three: that is, to enable two men using clean and lubricated blocks, to do as much hoisting as three with the rough and dirty blocks.

The lubricant used was Dixon's Waterproof Graphite Grease, as that is best adapted for anchor-handling tackle, which is exposed to both rain and sea water.

Graphite being unaffected by sea water or extremes of temperature, and the best lubricants for bearings getting heavy loads and rough usage, is admirably adapted for all machinery and tackle aboard ship, in frigid, temperate or torrid zones. R. GRIMSHAW.

Dixon's Waterproof Graphite Grease and Graphite Lubricants. Manufactured only by JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

"THE CYCLONE."

REALIZING the necessity of a thorough and efficient means for cooling and ventilating hotel-kitchens, restaurants, etc., at a moderate cost, the Huyett & Smith Manufacturing Co., being dry and dirty; tested this by slowly of Detroit, Mich., have recently gotten up

TABLE I .- NOT INCLUDING WEIGHT OF BLOCK AND HOOK.

Net weights hoisted.	Theoretically required to raise net weights.	Act'l v	veights r	equired.	Extra power required to hoist net weights.					die lite	븅
		Unlubricated and dirty bearings.	Olean and dry bearings.	Lubricated with waterproof graphite grease.	Unlubricated and dirty.	Clean and dry bearings.	Lubricated with waterproof graphite grease.	Unlubricated and dirty.	Clean and dry bearings.	Lubricated with waterproof graphi	Saving by lubrica
Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Per ct.	Per ct.	Per ct.	Per ct.
600	150	243	213	195	93	63	45	62.0	42.0	30.0	32.0
800	200	323	278	255	123	78	55	61.5	39.0	27.5	34.0
1,000	259	403	348	315	153	98	65	61.2	39.2	26.0	35.2
1,200	300	483	413	378	183	113	78	61.0	37.7	26.0	35.0

TABLE II. - INCLUDING WEIGHT OF BLOCK AND HOOK -41 POUNDS.

Gross weights hoisted.	Theoretically required to raise gross weights.	Act'l weights required.			Extra power required to raise gross weights.					p ifte	-69
		Unlubricated and dirty bearings.	Clean and dry bearings.	Lubricated with waterproof graphite grease.	Unlubricated and dirty.	Clean and dry bearings.	Lubricated with waterproof graphite grease.	Unlubricated and dirty.	Clean and dry bearings.	Lubricated wit waterproof grapl grease.	Saving by lubri
Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Per ct.	Per ct.	Per et.	Per et.
600 800 1,000 1,200	160.25 210.25 260.25 310.25	243 323 403 483	213 278 348 413	195 255 315 378	82.75 112.75 142.75 172.75	52.75 67.75 87.75 102.75	34.75 44.75 54.75 67.75	51,7 53.1 54.8 55.7	32 9 32.9 33.7 33.1	21.7 21.2 21.8 21.8	30.0 31.9 33.0 33.9

Note. — These results show that the use of Dixon's Waterproof Grease reduced the friction, in comparison with the case of dirty bearings, about 60 per cent, and when compared with clean dry bearings, about 33 per cent.

hoisting various dead weights by man-power, applied through a sixteen-fold compound tackle and measured by a spring balance.

We next had all bearing surfaces cleaned, but not lubricated, and made the same tests and then lubricated them and again repeated the tests.

The results are shown in the accompanying

In Table I no account is taken of the contant weight of the lower block and hook, nor of the varying weight of the rope between the blocks.

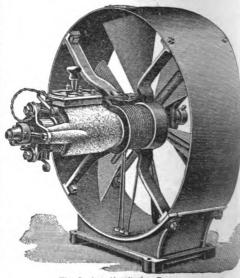
In Table II the weight of block and hook (forty-one pounds) is considered, merely to check the accuracy of the last column in Table I-the percentage of hauling power which is saved by lubrication, or wasted by nonlubrication.

As is usual with "cat and fish" tackle in the United States Navy, the upper block had roller bushings for the sheaves, and the lower one plain brass fixtures. The saving by lubrication would have been greater had both blocks had plain bushings.

The percentage of saving increased with the load, which is important in view of the

what they designate as the "Cyclone Ventilating Fan.'

The qualities of the Standard Smith Ventilating Fan are too well known to require any comment; the only possible objection to it



The Cyclone Ventilating Far

being the price, its substantial construction fact that the loads were very light for the making it impossible to manufacture it at a where the power required varies. The Com- tackle. As it is, sufficient power-saving is ef- price to compete with the many inferior makes



on the market. We have, up to this time, withstood the urgent solicitations of our agents to get up a cheaper line of fans, but have finally succumbed, and acknowledging the force of their arguments, that a large portion of the public using such machines consider simply the matter of price in making their purchases, we have designed and now offer for sale the "Cyclone Fan," herewith illustrated, and we claim that it is a better fan as to its durability, design, finish and effectiveness than any other fan on the market excepting the "Smith." We are enabled to make prices on this line of fans to meet those quoted on fans which are in no way to be compared. Having for years been the largest manufacturers in the country of this type of machinery, we intend to retain that position and to largely increase our proportion of the business by being able to meet every demand of the trade.

The Cyclone Fans are furnished with pulley

rents, and they can furnish them wound for any voltage.

> HUYETT & SMITH MFG. CO., DETROIT, MICH.

WHY NOT REMODEL THE OLD HOME?

MODERNIZE it and introduce a few conveniences to the interior.

It will interest every one and many will envy you its possession; besides, life will be made endurable if the objectionable inconveniences of one's house are removed and in their place improved interior woodwork, fittings and furnishings are introduced.

Among some of the improvements, for instance, would be a sliding-door (which is out of sight when not wanted) to replace an old swinging one that often covers the space where one could hang a fine painting other-

A new staircase that would widen the hall;

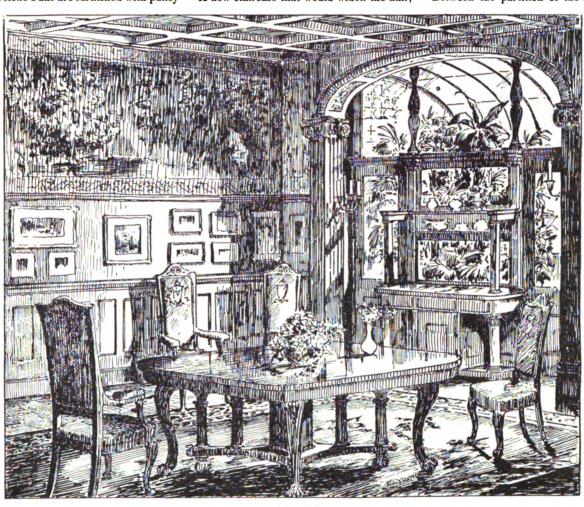
The scope of this department also includes the interior hardwood finishing of office-buildings, hotels and residences.

The accompanying sketch illustrates a remodelled interior of a dining-room in an old city house, which was the usual commonplace room with two windows opening on a rear yard, the light subdued by long heavy curtains until very little daylight ever entered into the

To accomplish this improvement, the centre brick pier between windows was removed and across the opening thus made, overlapping the jambs of the windows, a steel girder was placed which carried the brick walls overhead.

A conservatory constructed of galvanizediron sash-bars, angle-iron purlins, properly braced with struts and tension-rods and turnbuckles, with ventilators and the apparatus to work them, was put up as shown.

Between the partition of the conservatory



A remodelled Dining-room.

or with direct attached Electric Motors.

The Motor attached to this fan is what is known as the Fuller Patent Electric Motor, and is furnished with a three-speed switch. The pole-pieces of the motor being parallel with the fan-shaft, the spider or arms of the fan-frame being utilized as a keeper of the two magnets, the breaking-space of the poles is brought into a vertical position, removing all danger of short-circuiting the magnetic lines of force across the poles, which is done by the fan blades in the use of an ordinary motor. The commutators are built of numerous sections thoroughly insulated with mica, which is an additional safeguard against short-circuiting and "burn-outs," from which no difficulty is experienced in the use of this motor.

This combination Fan and Motor is carried in stock by the Huyett & Smith Manufacturing Co., Detroit, Mich., and at their various branches, wound for 110 and 220 volt cur- work.

room, and many other things which the shape and size of the house would suggest.

Where to commence and with whom to consult is a problem confronting the client contemplating such improvements.

Commence with the front door and consult the celebrated Steamship and Car builders. the Harlan & Hollingsworth Company of Wilmington, Delaware, who have their offices in London, New York, Chicago, Philadelphia and Washington, D. C.

They create artistic interiors and from the experience of years in utilizing space to the utmost, the development of a department devoted to the remodelling of house interiors is the natural result of the growth and progress of the business of that Company, which for over fifty years has held the first rank in the different branches of mechanical and artistic

mantels that would be appropriate for each and the wall of house, a space sufficiently wide to admit the swing of a door has been utilized overhead to ventilate the dining-room to the outside air.

> The light obtained through this improvement is very valuable and can be subdued by linen shades on the glass partition.

> The sideboard, as will be seen, is placed between the entrances to the conservatory, where it occupies no valuable room. Instead of using mirrors to reflect the room, which is the usual way of decorating a sideboard, the spaces are left open and filled with clear plateglass, and living-flower pictures are thus obtained.

> The woodwork of the room, which is dark oak, consists of a high wainscot divided into two sections, horizontally; the lower part panelled, the upper part flush. Upon this latter portion of the wainscot, the pictures are hung as upon a background. The ceiling is

is the strongest and most serviceable Cement made, and will permit the admixture of a larger amount of sand or gravel with less loss of strength than any other brand; it is therefore the most economical. It is the finest ground cement made, and has the largest bulk to the barrel.

The following test, made in actual work, by Col. D. C. Houston, Corps of Engineers, U. S. A., at the sea wall around Governor's Island, New York Harbor, has never been equalled by any other cement. It is as follows: Tensile strength per square inch, one day, 384 pounds; seven days, 600 pounds; thirty days, 818 pounds.

For Sidewalks it gives the best color, and the most endurable wearing surface. Most of the prominent Railroad Bridges and the large Office Buildings of the country stand upon a foundation of concrete made of ALSEN'S CEMENT.

Alsen's Portland Cement Works, New York Office, 143 Liberty Street.

panelled with beams of solid oak, with heavy oak flush panels between. The columns and capitals, together with the arches, spandrels and carved soffits, encase the old brickwork and make a finish to the woodwork. The polishing and rubbing down of the woodwork is a matter of course.

The decoration of the walls above the wainscot consists of tapestry-hangings, which fill the space, and so tone into the woodwork as to make the walls successful backgrounds for paintings, bric-à-brac, and such little touches of color here and there, as a woman gives to her home.

The Company proposes to show designs such as this, or in color, to illustrate the many ways of remodelling old houses into those of modern design and convenience, and as there are so many ways of producing a comparatively satisfactory result, it is their intention to make designs for the client until the style, finish convenience and price accord with his ideas and are consistent with the building.

More cannot be done by any one.

HARLAN & HOLLINGSWORTH CO. METROPOLITAN LIFE BUILDING, NEW YORK.

"MODERN HOUSEHEATING."

THE Gorton & Lidgerwood Co., 96 Liberty Street, New York, has just issued a new edition of "Modern Househeating." Of special interest are several half-tone plates showing the Gorton Boiler as used in heating large buildings. The book is altogether a very creditable publication and should be in the hands of every steam-fitter, architect and builder. A copy will be sent any one mentioning the American Architect and Building News.

THE NEW DEAFENER.

CABOT'S Sheathing and Deafening "Quilt" has already scored a triumph over the ordinary methods. Actual tests have shown that three thicknesses of the best felt are not equal to a single thickness of Quilt. This, of course, shows a very important economy in application, in addition to the low cost of the Quilt, and it also means economy of space and weight. The flat blades of seagrass of which the filling of the Quilt is composed, overlay each other at every possible angle, forming innumerable air-spaces which are of the greatest importance for deafening or insulating.

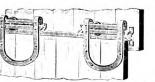
The quilt has been subjected to many tests, notably one for deafening in the Massachusetts Institute of Technology, and its superior non-conducting power has been shown repeatedly.

BROWNVILLE MAINE SLATE COMPANY.

Office, WORCESTER, MASS. Strongest, toughest, most durable slate Unfading black rooting-slate. Strongest, toughest, most durable slate in the world. Punching does not damage it. It may be punched full of holes an inch or two apart without breaking. Drilled when desired.

Toughest Slate. Fewest Leakages Oldest quarry in Maine.

STATE LUNATIC ASYLUM, WORCESTER, covered with our Slate.

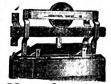


Patent Steel Barn Door Hanger,

ANTI-FRICTION. MOST COMPLETE IN CONSTRUCTION. MATERIAL THE BEST. NO BREAKAGE.

Ease of Movement.

Always in Order.



LANE'S Patent Noiseless Steel Parlor Door Hanger.

Hanger is made of steel throughout, including wheel, except solid interior leather tread, causing to roll noiselessly. Single steel track instead of double wood rail.

Ask your Hardware dealer, and send for Circular.

Manufactured by LANE BROTHERS, Poughkeepsie, N.Y.

In dwellings, refrigerators, cold-storage warehouses, office-buildings, etc., it will be found much more effective than papers, felting or back-plaster, and the ease of application is fully equal to any of them. The seagrass contains Silicon in place of Carbon, and the Quilt is thus much less inflammable than felts or papers, because this grass will not burn, simply shrivelling when heat is applied. Sample and information can be had upon inquiry of the manufacturer,

SAMUEL CABOT.

BOSTON, MASS.

EIGHTEEN ELEVATORS FOR THE NEW COMMERCIAL BUILDING, PHILADELPHIA, PA.

Such a number of elevators to be placed in one building is anything but an ordinary occurrence. Only a few years ago it would have been exceptional for a building to have more than one elevator; but with the raising of buildings to such enormous heights as they are at present, it is necessary to build what might be termed "vertical streets." The builders of the new Commercial Building in Philadelphia received estimates and inquired into the safety, speed and economy of all the first-class elevators manufactured in this country, and finally awarded the contract to the Graves Elevator Company, of Rochester, N. Y. This contract was awarded after an exhaustive and competitive investigation, by

penses, though the bid of the Graves Elevator Co. was by no means the lowest.

The Graves Elevator Co. have also just been awarded the contract for two of their high-speed hydraulic passenger elevators for the new Tremont Temple, Boston, Mass.

GRAVES ELEVATOR CO.,

ROCHESTER, N. Y.

NOTES.

THE "Peerless" House Heater people report some smart sales for their circulating Steel Boiler. They are behind with their orders at their factory. The simplicity and cheapness of their Heater is attracting wide spread attention.

GEORGE H. BELL & CO., Sole Agents, 114 AND 116 NASSAU ST., NEW YORK, N. Y.

Owing to the success of the "Peerless Heater," as managed by Geo. H. Bell & Co., of 41 Dey Street, New York, it was deemed expedient by the owners to form a Stock Company, which was completed on May

The simplicity and cheapness of the Heater, together with the fact that it answers for both Steam and Hot Water Heating, places it first in the market, and as a result, the factory is behind with their orders.

The corporation will be in such shape for the future as will facilitate the prompt execution of all orders which the popularity showing superior economy in running ex- of the "Peerless Heater" deserves.



ADVERTISERS' TRADE SUPPLEMENT.

No. 146.

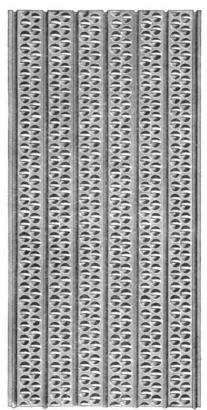
SATURDAY, AUGUST 4, 1894.

THE "PIQUA" METALLIC LATH.

THE Cincinnati Corrugating Company with Rolling Mills, Corrugating Works and Offices at Piqua, Ohio, have recently perfected and are now placing upon the market a new and improved form of steel lath, shown in the accompanying engraving, for which is claimed a number of improved features of interest to the reader.

The material used is of the best grade of steel, in sheets 271" wide by 48" long, each sheet covering exactly one square yard of surface. These sheets are traversed lengthwise at intervals of 34" by 3" corrugations, thus providing great rigidity and stiffness to the entire sheet.

Between these corrugations, as will be noted upon reference to the illustration, are formed a series of slots at right angles to the



The "Piqua" Metallic Lath.

corrugations, the metal on either side of the slot being depressed into cup-like shape, into which the mortar or plaster easily slides, and passing through forms a "key" of extraordinary strength and perfection, besides obviating entirely the useless and expensive waste of plaster incurred when wire, metal, or common wood-lath, is employed.

stretching, stiffening-pieces, nor staples for securing it to the framework, common nails only being used for attaching it in position.

While this Lath is used quite largely in buildings of wooden construction, still it is principally used in strictly fireproof buildings in connection with iron beams and furring, and it is here that the rigidity and stiffness formed by the corrugations makes it especially valuable, for the reason that the studding can be placed at least two feet apart, making thereby a great saving in the cost of the studding. Where this Lath is used in connection with iron, the usual method is to wire it into place, the cost of which is little, if any, more than the cost of nailing it to wooden studs.

It is especially adapted for Adamant or Patent Plaster, and the rapidity and ease with which it may be applied to round, square or angular surfaces, together with the fact that it affords a much firmer holding-surface for the plaster, and its fireproof qualities commend it to all architects, builders and owners of buildings.

CINCINNATI CORRUGATING CO.,

THE "SPENCE" BOILER.

Our notice has recently been called to the fact, that some makers of hot-water heaters are employing all the wit they possess to put on the market heaters that have a similar external appearance to the original genuine "Spence," which we own and control, and are sending out jaunty letters as a disguise. We most emphatically say our Company own and control all the original United States patents covering the most essential features in the internal construction of the genuine "Spence" boilers pertaining to the waterpost, which makes each section independent of the other. In no other boiler manufactured and sold, that we know of, is this possible. We shall not try to deceive any of the trade by over-rating any of the large line of boilers we manufacture and sell, as we are working strictly upon the basis of maintaining the already established reputation we enjoy. We are not merely doing business to-day, but expect to continue in the market for a good many years. If you accept the desultory letters sent out by new beginners, you must take your chances on results, as it takes years of experience to overcome certain inherent defects in the construction of an article like water-boilers. After a long experience of twenty-five years, during which time we have

it prompts us to know we shall continue to stand preëminently at the head of the list, and want to merit a continuance of your kind patronage and confidence. Don't hesitate to write us regarding any details in connection with steam or hot-water heating, as it is a great pleasure for us to cooperate with you to our mutual advantage.

> AMERICAN BOILER COMPANY, CHICAGO, ILLINOIS.

THE INSULATION OF FRAME RESI-DENCES.

In the construction of frame residences, the question of insulation is an important one to those who are desirous of building a home which will be as fireproof as a frame building can be made, and the most comfortable both in summer and winter.

In the selection of an insulation, it is well, therefore, to select one which is not only fireproof, but which is, at the same time, a good non-conductor of heat.

To obtain the best results in fireproofing, it is essential that the material employed should fill the entire space between the studs, as these spaces form natural flues for the spread of fire from cellar to roof, and for this reason alone, asbestos paper is not desirable for this work, although in itself it is fireproof. The same may be said of paper sheathing and hair felt, although the latter is not as good as asbestos paper, as it will decay, and in so doing give off unpleasant odors.

It is also well when selecting an insulator to look for one which is light, and clean to apply, and for these reasons brick-filling, although filling the entire spaces between the studs, is not desirable either. It is, beside, a poor non-conductor of heat.

Among the materials which have been used extensively in the past few years for this class of work, mineral wool appears to fully meet the requirements of an insulation for frame residences.

From statistics and tests we know that its fusing point is about 2200° F. which would show that it is fireproof. It fills the entire spaces between studs and is one of the best non-conductors of heat known, and will, so experience shows, save its cost in fuel in a few years. It is also both sound-proof and vermin-proof.

To sum up: in the selection of an insulation we should think of the comfort of a house - cool in summer, warm in winter and should look for something which is cheap, ommon wood-lath, is employed.

Seen a great many manufacturers of boilers light and odorless, durable and non-decaying, The "Piqua" Metallic Lath requires no pass into a state of "innocuous desuetude," fire and vermin proof, easy and clean to apply and which is a good non-conductor of heat and will fill the entire space between studs.

WHITE LEAD.

JUDGE RUFUS B. SMITH, of the Superior Court, yesterday morning handed down his decision in the case of the Walker Paint Company against the Anchor White Lead Company.

The case, which was closed some ten days ago, lasted nine weeks, and testimony was offered from various parts of the country, while some of the heaviest legal pounding done in the Court-house for a good long time was that indulged in by the attorneys on both sides of the important suit. Judge Smith dismisses the petition of the plaintiff. The Walker Paint Company sued the Anchor White Lead Company and the Eckstein White Lead Company in August, 1891, claiming that the defendants were using false analyses of the plaintiff's goods; that the plaintiff did not use barytes in its alleged pure oxidized white lead, and that the defendants were issuing circulars containing chemists' analyses showing the goods of the plaintiff to be adulterated with barytes. Action was brought for an injunction and \$50,000 damages. Judge Smith was rather severe in his remarks. His decision will attract widespread attention, in view of the fact that the case involves much more than shown on the face of the petition. The attorneys in the case were: Plaintiff Jos. B. Foraker, Charles Prior, Frank H. Kinney, Drausin Wulsin and Frank O. Squire, for the Anchor White Lead Company, and Elliott H. Pendleton for the Eckstein White Lead Company. Judge Smith gave judgment for the defendants and dismissed the plaintiff's

The gist of the Court's decision is expressed as follows:

JUDGE SMITH'S DECISION.

"In the length of time which this case has taken, ten weeks, in the stupendous proportions which the record has reached by reason of the volume of testimony, depositions and exhibits, in the absolute contradiction in many parts of the testimony, and in the sensational surprise which resulted from the testimony of two of the witnesses, and in the zeal, perseverance and apparent conviction of the respective counsel in the justice of their

cause, the case presents features which mark it as a case which may justifiably be characterized as extraordinary. The defendants admitted that they had published the analysis complained of, and their principal ground of defense was that the statements contained in the analysis were true, and that the plaintiffs, as manufacturers of white lead, under their different brands, had during the years 1889 and 1890, notwithstanding their statements to the contrary, used barytes as an adulterant. The defendants further claimed that having had numerous analyses made of the product of the plaintiff, all of which showed the presence of this adulterant, they were justified in publishing these analyses for the purpose of informing the trade and public generally of the fact that the plaintiff's goods were adulterated. Nearly fifty different analyses were introduced in evidence on both sides, and in those made of goods manufactured prior to August, 1891, the presence of barytes as an adulterant was almost invariably shown. The plaintiffs attempted to establish, by the testimony of its officers and three of its employés, that no adulterant had ever been put in its goods, but the Court finds that the analyses show conclusively that such was not the fact. "The Court finds that the claim of the

plaintiff that the defendants tampered with or caused to be adulterated any of the kegs of the plaintiff's goods is wholly unfounded and unsupported by any evidence worthy of belief. The Court further finds that the testimony of Alex. Matthews is entitled to no credit whatever, and that the testimony of William B. Burke was as deliberate a case of perjury as has ever been attempted in court. The Court further finds, after excluding from its consideration a number of the analyses, not because there is any question as to their correctness, but as it is unnecessary to follow them, that the evidence shows that the plaintiff did adulterate its goods in the years 1889-1890, as shown by the analyses made by the different chemists which the defendants caused to be published and circulated. Judge Smith, in concluding his written opinion of a very lengthy written document, says: 'In conclusion, my finding is that by a clear preponderance of the evidence the defendants have established, and to my mind beyond all reason-

plained of in the petition were made, that the plaintiffs were sending out goods as first-class which were adulterated with barytes; that the analyses complained of in the petition are true, and that the petition should be dismissed upon that ground. It is, therefore, unnecessary that I should consider the other defenses made by the defendants. The decision, owing to the prominence of the parties involved, is of international importance and interest."

— Cincinnati Commercial Gazette, May 29.

NOTES.

ASBURY PARK, N. J., July 11, 1894.

Mr. I. P. FRINK, 551 Pearl Street, New York, N. Y.: --

Dear Sir, — Four concerns figured on lighting our church. Your estimate was the highest. We investigated all of them. The committee was of the opinion that it was better to pay a little more and know what we would get than to pay a little less and take chances. The fixtures are all in, and are just right. Everybody is pleased with them. We don't know but that some of the other parties might have done as well for a little less money, but we believe in reputation, and that the man who has been in business the longest and has done the greatest business gives more for the money, and that the man who under-figures makes it up at the expense of the customer.

Sincerely yours,

WM. J. COOPER, Secretary.

By Order of the Board of Trustees First Presbyterian Church, Asbury Park, N. J.

BUILDING INTELLIGENCE.

Reported for the American Architect & Building News.

ADVANCE RUMORS.

Bridgeton, N. J. — A school, will be built for which bids have been asked.

ALTERATIONS AND ADDITIONS.

Brooklyn, N. Y. — Dean St., 8 8 150° w 5th Ave., onest'y and basement brick church, 45° x 70°, slate roof; two-st'y brick extension, 60° x 18° 9°, tin roof, to be added and other alterations made; \$3.800; own., Trustees, G. A. Wahlburg, chairman, 281-289 Butler St.

Trustees, G. A. Wannung, channel, St.

Remsen St., No. 30, four-st'y and basement frame and brick dwell., 25' x 56' 3'', tin r of; one-st'y and basement brick extension, 10' x 16', tin r oof, to be added, internal and other alterations to be made; \$5,000; own., I. S. Coffin, 72 John St., New York City; arch., W. B. Tubby, 81 Fulton St., New York City.

The Grace & Hyde Co., Interior al-

Chicago, 111.—The Grace & Hyde Co., interior alterations, 402-412 Wabash Ave.; \$7,000.
Charles Horn, addition, 164 Samuel St.; \$3,000.

CHURCHES.

Chicago, III — The Chicago City Missionary Society Church, 8444-8446 North Leavitt St.; \$3,000.

(Continued on page 4.)

LOCALITY OF AUTHORSHIP OF DESIGNS

PUBLISHED IN THE AMERICAN ARCHITECT.

The assertion that the American Architect is a paper whose characteristics are national and not merely local is supported by the following table, which exhibits the manner in which several journals have treated domestic architecture In this comparison the IMPERIAL edition of the American Architect is considered, since the additional plates of the INTERNATIONAL edition are, in the main, illustrations of foreign work.

Paper.	Number of subjects contributed.	Number of contrib- uting architects.	Towns in which contributors were established.	States in which contributors were established.	
No I	214 137	109 78 56	28 21 16	16 15 11	I
No. II		78	21	15	۱
No. III	118	56	16	11	
Am. Architect.	267	152	47	24	1

In the first column, "subjects," only actual domestic work is included (foreign work, imaginative designs and the work of sketch-clubs are excluded), and the figures there given indicate that this number of designs might have been prepared by the same number of architects practising in the same number of different towns. The remaining columns show how nearly this ideal distribution has been reached in each case.

or publication furnished.					
Subjects.	Per cent of total number of sub- jects.	Different architects contributing.	Per cent of total number contrib- uting architects.	Towns.	
161 46 70	.752	75	.688 .307 .39 2	7 2	
46	.335	24	.307	2	
70	.335 .593	75 24 22	.392	1	
	,		0.0		
73	.273	39	.256	3	

Architects practising in the State

From this table it appears that Massachusetts architects—.256 per cent of the total number of contributors—provided only .273 per cent of the total number of designs published, percentages which, in view of the fact that Massachusetts is one of the most populous States in the Union, prove that they have not been accorded an unreasonable mount of our limited space.



ADVERTISERS' TRADE SUPPLEMENT

No. 147.

SATURDAY, SEPTEMBER 1, 1894.

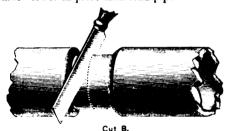
VOLUME XI.V.

LEAD-LINED IRON PIPE AND FIT-TINGS FOR SUPPLY, VENTILATION AND SOIL PIPE.

This pipe consists of standard wroughtiron water-pipe and malleable iron fittings lined with commercially pure lead.



We claim that this pipe has the rustless qualities of lead pipe with the strength of iron pipe; and it is at the same time very much lower in price than lead pipe.



When coupled together the lining forms a continuous lead pipe, which entirely protects the iron from the action of the water. It is now used in forty cities and towns in New England for service-pipe.

iron, and drawn out by means of a tool designed for the purpose, but not shown in the cuts. It will be noticed that the thread cut and Chemist for the American Bell Telephone on the iron pipe is cut down to the lead on the end of the pipe (see Cut D), so that when it is screwed into a fitting or a stopand-waste, the thread on the stop-and-waste or other fitting screws is closely against the lead lining (which is turned over the end of the iron pipe), so that no portion of the iron is exposed to the action of the water.

Our couplings (see Cut E), elbows, T's and all fittings are lined with lead, as you see in the cut, and have a part of the thread at each end of the fitting formed in the lead lining. Thus, when the fitting is screwed up, the end of the pipe projects several turns into the lead thread of the fitting, and the lead lining of the pipe is packed closely against the lead lining of the fitting, making a water-tight lead joint. By this method every particle of iron in the pipe couplings, or any of the fittings is entirely protected from any possible contact with water.

[Extract from the Annual Report of the Water Commissioners of the City of Pawtucket, R. I., for the year 1893.]

"We are now using for all services what is known as the New England Water Pipe Co.'s lead-lined iron pipe. We have had an experience with it for the past two years, and believe it to be safe and responsible. It

More than two years ago, this company asked Mr. Thomas D. Lockwood, Electrician Co., to give his written opinion as to whether or no any galvanic action would take place between the lead and iron in this pipe. The following is an extract from that opinion:

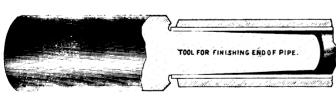
"I am, therefore, of the opinion that the compound iron-lead pipe used to convey water is not liable to corrosion or deterioration by reason of galvanic action between the said two metals; that the water will not in any sense be acted on adversely by such combination of metals and any result accruing there-

(Signed) THOMAS D. LOCKWOOD, Electrician and Chemist of American Bell Telephone Co., Boston."

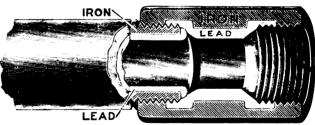
NEW ENGLAND WATER PIPE COMPANY. WAKEFIELD, MASS.

SILVER GRAYS AND MOSS GREENS.

SILVER grays and moss greens are at present the most popular colors for suburban shingled houses, and to meet the demand for them a great variety of shades of these two colors has been formulated in Creosote Shingle Stains. These Stains were the first ever made, and have been first ever since: first in durability, in purity, and in the production of new and artistic tints. Any architect who has in mind a particular scheme of color which he desires to produce can always have special shades of these stains made to suit his requirements, or any one who wishes something



Cut C.



been made.

In fitting a length of this pipe, we first cut the iron pipe in the ordinary manner (see Cut A), taking care not to cut the lead lining at the same time; then we take hold of each side of the cut and stretch the lining about



Cut D.

half an inch, then cut it (see Cut B) so as to leave room for turning the edge (see Cut C), over the end of the iron pipe; or he lining may be cut at the same time as the

practically makes a lead service, and at one-half the cost of lead pipe, which, under our pressure, causes expansion and leakage."

[Letter from Listers Agricultural Chemical

"Dear Sir, -- In answer to your letter of the 7th instant, would say: We have a line three hundred feet long of two-inch lead-lined water-pipe that we pump sulphuric acid through about once an hour, at forty-pound pressure to the square inch. It has been in use about three months, taking the place of a two and one-half inch lead pipe. It has given two and one-half inch lead pipe. It has given entire satisfaction, having had no leaks or We are, trouble with it so far.

Yours respectfully,
LISTERS A. C. WORKS, WM. CARSON, Chief Engineer."

architects and their clients. SAMUEL CABOT.

BOSTON, MASS.

THE Globe Ventilator Company of Troy, N. Y., continues to secure exalted proof of the satisfactory character of its ventilators. Two 60-inch Globe Ventilators have just been placed on the Powers House, at Rochester, N. Y.

different from the colors shown in the regular list of samples can have his choice of hun-

dreds of these specials which have already

The guaranty of the manufacturer that

the stains are durable, that they are unadul-

terated, and that they will not blacken with age, is of no small importance in the eyes of

THE

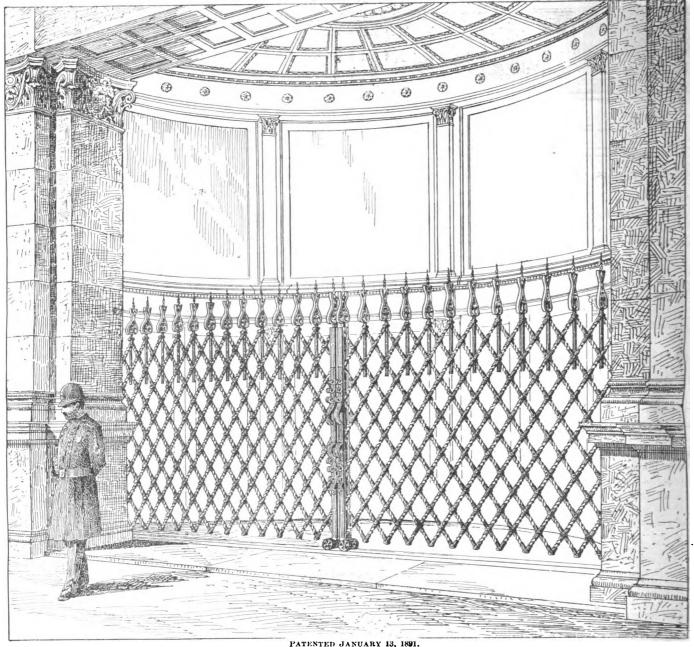
WILLIAM R. PITT

COMPOSITE

WORKS, IRON

202 FIFTH AVENUE,

NEW YORK. COR. TWENTY-FIFTH ST.



STEPHEN D. HATCH. ARCHITECT.

ENTRANCE TO THE ROOSEVELT BUILDING, BROADWAY AND THIRTEENTH STREET, NEW YORK.

MARK EIDLIDTZ & SON, BUILDERS.

THE ABOVE IS ONE OF THE IMPROVED PITT PATENT FOLDING GATES MADE IN BRONZE METAL. THE GATE IS 8 FEET 6 INCHES HIGH AND TWENTY-TWO FEET WIDE.

AS A RULE, FOLDING GATES ARE NOT ARTISTIC IN DESIGN, BUT IT IS OUR CONSTANT AIM TO PRODUCE THEM IN ATTRACTIVE FORM, AND WE HAVE SOME EXCELLENT DESIGNS IN GATES WHICH FOLD SO AS TO OCCUPY THE LEAST POSSIBLE SPACE.

THESE GATES ARE SUITABLE FOR LARGE OFFICE BUILDINGS AND FINE STORE FRONTS. THEY TAKE UP LESS ROOM THAN THE MASSIVE SWINGING DOORS, AND WHEN MADE IN BRONZE METAL COST LESS THAN THE RIGID GATES.

ARCHITECTS SHOULD SPECIFY THE "PITT" PATENT GATES AND THEN SEE THAT THEY GET THE RIGHT ONES.

WE ARE KEEPING UP OUR REPUTATION FOR GOOD WORK IN ALL OUR LINES AND IF YOUR FOLDING GATES, GRILLES, RAILINGS AND LAMPS ARE MADE BY US YOU MAY BE ASSURED OF ARTISTIC DESIGN AND GOOD WORK.

ADVERTISERS' TRADE SUPPLEMENT.

No. 148.

SATURDAY, OCTOBER 6, 1894.

VOLUME XLVI.

OUR SUCCESS IS YOUR GAIN.

THE American Boiler Company, 84 Lake Street, Chicago, and 94 Center Street, New York City, being the outgrowth of several large plants only a few years ago, have made phenomenal progress in the development of house-heating by steam and water. This can easily be accounted for when the public understands that the heaters they manufacture are types of the most modern style, embodying practical and effective principles of economy in fuel, enormous heating capacities and rapid flue circulation.

It has taken many years of close and hard study by the promotors of this Company to place themselves before the public in the position which they now hold. Most of the lines of heaters which they manufacture and sell have been tested in all practical ways, in order, if possible, to bring out any weakness or inherent defects.

This principle has been followed in order to obtain success and give the trade an article which invariably brings satisfactory results, so that to-day their line of heaters has become well known and very popular with the trade, so that they are almost a household word.

Some of the types which they manufacture you will readily see have an established reputation, such as the "Florida," "American," "Modern," and "Soleil" for steam, "Spence," "Bolton," "Perfect," and "Tropic" for hot water.

The Company manufacture 182 sizes and 18 types, and with this large variety they have no difficulty in pleasing the masses. They have such large facilities for producing goods, they can take all advantages in way of

Their help is of the most skilled, and the heaters they place on the market are thoroughly and carefully inspected, so that there is no possibility of any being imperfect.

Another very important matter to consider is the fact that most of their heaters have a very large exposure of fire-surface brought in close contact with the fire. This is the means of creating a quick circulation, making their line the most economical of any mentioned.

Among their clerical force, they employ a line of skilled draughtsmen and engineers. This assists them in a great many ways to develop the question of heating, upon a practical and not theoretical basis. They can take the plans of your building and lay out the locaion of the boiler, radiation, etc., so that you will have a most complete plant. They are

to the most economical system of heating, and furnish estimated cost for a complete apparatus through your local dealer.

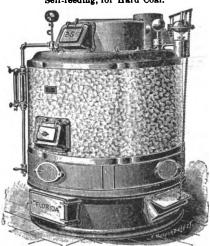
This Company carry a full line of all radiators, valves, iron pipe, fittings, bronzes, etc., so that they can handle the business entirely from their offices. Almost every city and village in the country is visited by their travellers.

They purchase raw material in enormous quantities for cash, so that they are continually on the alert to give their patrons bottom prices, which has great attraction in these times of sharp competition. The time has come when the trade and the customer want least amount of money, and do not feel as though they could run any risks or chance in putting in a heating-plant.

Following, they show a few illustrations of heaters, calling attention to some very valuable points.

> THE "FLORIDA" STEAM BOILER. (Trade Mark.)

Self-feeding, for Hard Coal.



View of Boiler set up complete.

Equipped with all the most modern and convenient appliances; constructed upon the most advanced scientific principles; tested for many years in climates severe and mild, we have to present in the "Florida" a practical and economical steam boiler, not in its experimental stages, but one whose operation is sure, and from which the very best results from every standpoint have been obtained.

The "Florida" Steam Boiler is constructed of three or more cast-iron water-sections, hollow and circular in form, with six ovalshaped return-flues.

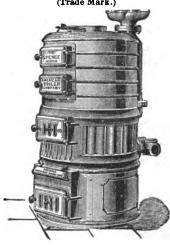
The fire is in the centre of the boiler, and

which it comes in direct contact. The fire. in accordance with the size of the boiler, is from ten to fifteen inches thick, and slopes off from the magazine to the sides, so that as it gets low the ashes do not lie against the fire surface and destroy its effectiveness.

The products of combustion pass up through the centre of the boiler, and striking the dome, descend through the returnflues, and then ascend on the outside between the sections and the jacket, baffle-plates being placed so as to turn the heat to the front of the boiler, and thence to the back, into the chimney.

The combustion-chamber is so arranged as the best goods they can possibly buy for the to secure a perfect combustion of the fuel and

> THE "SPENCE" HOT-WATER HEATER. (Trade Mark.)



The "Spence" Hot-water Heater, as illustrated, has been perfected during an experience of over thirty years, devoted exclusively to the successful manufacture and sale of hotwater heating apparatus.

It is of attractive design, portable, easily set up, of simplest construction, and can be run with the greatest economy of fuel.

The fire-pot section consists of two hollow rings, top and bottom, connected by a series of vertical double-tubular passages with a solid bridge wall between each. The corrugations due to this form of construction provide for a largely-increased heating surface, and free admission of air at the edge of firepot, so that perfect combustion is secured.

By reason of the construction of the "Spence" Heater, a positive circulation of the water is secured, as can readily be seen by referring to the accompanying cut. The water, after entering the fire-pot and becoming heated, rises through the water-way to one side of the water-post; here it has access always willing to give their views in regard is surrounded by the bottom sections with to all sections through the port-openings, and

cannot pass to flow-pipes until it has traversed completely one of the sections. As the heated water is delivered from the sections, it enters the other side of water-post and passes directly to the flow-pipes and cannot return to base of the heater until it has passed through the radiators or coils.

"PERFECT" HOT-WATER HEATERS. (Trade Mark.)



For Hard or Soft Coal, or Natural Gas.

Though a great deal depends upon the proper fitting-up of the mains, coils, and radiators used in the hot-water heating-plants, together with the size of pipes and their proper connection to and distribution from the heater, still, the most important point of all, to insure plenty of heat, with economy of coal, is a powerful and rapid circulating heater, having a large amount of fire-surface (well applied to the fire) in proportion to the grate-area.

The heater, in fact, is the mainspring of the whole arrangement, as, however well the

for a rapid and positive circulation of the water with the least possible friction.

Its economy of fuel depends upon its capacity to transmit heat to the water contained in and circulated through it.

A glance at our cut will show the enormous amount of surface exposed to the direct action of the fire; also, that every particle of water is compelled to travel around and over the fire seven times before reaching the mains, thus absorbing a greater amount of heat from the flame and gases in their course from the fire-box to the smoke-flue than in any other make of heater.

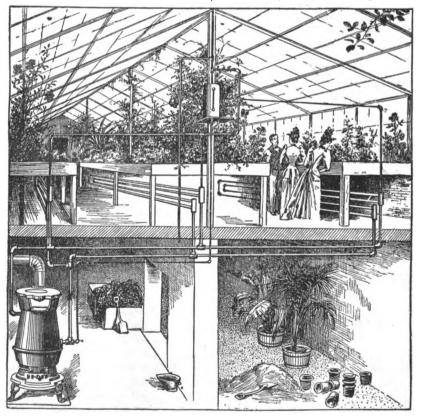
GREEN-HOUSE HEATING.

The rapid demand for several styles of their heaters, especially adapted for heating green-houses, conservatories, etc., has caused the Company to make some good improvements in the way of being easily connected, simple to operate, and economical to run.

In addition to the few heaters shown by the above, the American Boiler Company manufacture many other styles, to suit different conditions, and would like to have any one write them for their illustrated catalogues, or if you should be interested in heating and will send them plans of your building, they will give you their views in regard to the best system of heating, and if desired, furnish estimated cost.

They have warehouses and sample-rooms in all of the large cities, carrying a full stock and show a fine line of samples.

Realizing at all times how difficult it is to be in person with those in need of heaters, they have a department in their business, which is exclusively devoted to the correspondence and care of prices, illustrated catalogues, etc., and they would be very glad indeed to



pipes and apparatus are fitted up, if the heater | hear from any of the trade needing goods in is not constructed on the most improved principle to give quick, positive circulation, the whole affair is generally most unsatisfactory and expensive to keep in operation.

The heating capacity of a boiler does not depend upon the space it occupies or the claims made for its economy of fuel, but upon the amount of heating surface presented to the direct action of the fire, and its construction

their line. They have for the past fifteen years made a close study of what the public wants, and this experience is very valuable to those who intend to use steam or hot water as a medium of house heating, and acts as a great safeguard against any failures which are so apt to occur with amateurs in the business.

respondence which will always receive their careful attention and prompt reply. They maintain superior facilities and can give assurance of the most satisfactory results.

AMERICAN BOILER CO., 84 LAKE ST., CHICAGO, ILL.

JAMES S. CONOVER.

JAMES S. CONOVER, formerly of J. S. Conover & Co., 28 and 30 West Twentythird Street, died recently at his home in Stratford, Conn. Mr. Conover, who was seventy-five years old, was one of the pioneers in this country in the manufacture of ornamental grates and wood mantels. The business was established in 1844 in Canal Street, by James S. Conover, as senior member of the firm of Conover & Wooley. In 1870 Alonzo E. Conover, a son of James S., was admitted to the firm, which became known as Conover, Wooley & Co. In 1876 Mr. Wooley retired, and the firm was called J. S. Conover & Co., under which style it removed to West Twenty-third Street, and did business till its assignment in July, 1893, caused by the prevailing stringency in the money market. The firm's business was largely developed through the individual efforts of Mr. Conover, who gained an enviable reputation in the business world for energy and integrity. After the assignment the interests of the firm were put in the hands of a receiver, and the business is now carried on at 101 Fifth Avenue. - N. Y. Tribune.

THE AMERICAN MINERAL WOOL COMPANY.

THE American Mineral Wool Company, whose Eastern office is at 2 Cortlandt Street, New York City, occupy a niche in the business activity of the metropolis, peculiarly their own. In demonstrating the uses of mineral wool in architecture they have won an eminent and well-deserved success by improved processes of manufacture lately invented and perfected by this company, for which patents have been granted. quality of the wool produced by them is much improved in strength and texture, lightness and freedom from draughts, over that heretofore made. One of the most important qualities of mineral wool is its unequalled power to resist the transmission of heat and cold. No other material, either natural or manufactured, which can be used practically in the arts approaches this as a non-conductor of heat, while repeated trials have shown that the liberal use of mineral wool makes a better protection against the insidious attacks of Jack Frost than is afforded by any other material. In protecting water-pipes from freezing it has been eminently successful where all other means have failed. The use of corrugated-iron lath in connection with a filling of mineral wool between the studding is being largely adopted by progressive architects and people who are building. This mode of construction affords the very best plan of protection against fire, short of the use of absolutely non-combustible materials in the entire building. Mineral wool also possesses a special value as a non-conductor of sound, and is largely used for deafening school-houses in Chicago, Cleveland and other cities. It is likewise a protection against rats, mice, insects and disease germs. The American Mineral Wool Company was incorporated in 1894, under the laws of New York. as a successor to the United States Mineral All they ask is to be favored with cor Wool Company, which has been in existence



The main office is located at since 1880. Cleveland, Ohio, with factories in Stanhope, N. J. and Chicago, Ill., and branches in New York, Chicago, Philadelphia and St. Louis. The officers of the company are as follows: viz., F. H. Prentiss of Chicago, President; W. C. Andrews of New York, Vice-President; C. H. Rockwell of Cleveland, Treasurer. Mr. H. Franz is manager of the New York office supplying the trade in New York and Pennsylvania, and is a gentleman of experience and reliability.

> AMERICAN MINERAL WOOL CO., CLEVELAND, O.

WOOD BLOCK FLOORING.

I TAKE great pleasure in calling attention to the fact that wood block flooring so long famous in Europe, and in use there in every public building of importance built in the past ten years, can now be obtained here, and therefore there is no longer any reason why "our friends across the sea" should continue in this respect, to be on a better footing than ourselves. Several years spent by me in experimental work and studying the state of the art as practised on the other side, has resulted in the perfection of very important improvements in shaping and preparing the blocks, and especially in the method of securing them firmly to the concrete foundation. This is the one absolutely essential point upon which the life and success of the block floor depends, and the Patent Office records disclose an interesting history of the persistent efforts made by foreign manufacturers to accomplish this most desirable object. The method I have devised surpasses any other that has been patented, as my blocks are by the most simple means anchored immovably to the foundation. 1 have equipped my factory with machinery designed and built especially for this work, enabling me to turn out the blocks with rapidity and mathematical exactness, and can therefore furnish a floor that is perfect and reliable in every particular.

I shall be glad to send to any one a sample of my floor, list of buildings where it is in use and where it is now being laid, and to submit estimates for work that may be required in any part of the country. The method of anchoring each block will be fully shown on the sample.

JAMES G. WILSON, 74 WEST 23D STREET, NEW YORK, N. Y.

NOTES.

Two No. 26 Gorton patent side feed hotwater boilers will be used for heating the Fogg Lodging-house recently erected on 53d Street near 11th Avenue, New York. The installation is made by Messrs. Gillis & Geoghegan of that city, and is notable on account of the immense size of the boilers.

MESSRS. N. & G. TAYLOR Co., Philadelphia, advise us that their Tinplate Works have been continuously running on full time right along; the demand for their special high-grade ternes, especially the "Old Style" brand, constantly increasing.

The following are a few of the most prominent buildings lately covered with their fine brand, the "Old Style":

The Auditorium, the Trinity Chapel, Veterinary Stables and Central Fire house, Philadelphia, Pa.; St. Bonaventure College and Seminary, Allegany, N. Y.; the New Ex- any other month during the current year.

ecutive and Library Building, Harrisburg, Pa.; Depot Quartermaster's Quarters, Ft. Sam Houston, Tex.; Wasatch School Building, Salt Lake City, Utah; Chamber of Commerce, Richmond, Va.; the State Normal School Building, Willimantic, Conn.; the Thompson Laboratories, Williams' College, Williamstown, Mass.; St. Lucy School-house and the Smith Premier Typewriter Works, Syracuse, N. Y.; the Binghamton Trust Company's Building, Binghamton, N. Y.; Engineering Hall, College of Engineering, University of Illinois; the Winthrop Normal and Industrial College of South Carolina; the Medical Lake Insane Asylum, Washington Territory; the American Line of Steam er, Pier Sheds, New York City; N. Y. Institute for Feeble-minded Children, Syracuse, N. Y.; the Grocers' Exchange, New York City; the Seton Hospital, Spuyten Duyvel, N. Y.; Masonic Temple, Norwich, Conn.; 14th Regiment Armory, Brooklyn, N. Y.; the Dolgeville Turnhalle, Dolgeville, N. Y.; the City-hall, Springfield, Ill.; the Illinois State Fair Buildings; the Industrial Training School, Indianapolis, Ind.; the Roller Mill Company's Elevator and Mill, Claremore, I. T.; St. Mary's Roman Catholic Church, Baldwinsville, N. Y.; High School Building, Wabash, Ind.; Grand Central Railroad Station, Portland, Oregon.

THE Joseph Dixon Crucible Co., Jersey City, N. J., manufacturers of lead-pencils, crucibles, stove-polish, and other graphite products, have felt the necessity of stiffening the backbones of their salesmen who have complained of competitors' cut prices, and do t after the following fashion. In times like these, when work is none too plenty, and the manufacturer is anxious for orders and the salesmen likewise, there is great temptation to cut prices for the sake of getting a quantity of business and thereby deluding ourselves into the idea that we are prosperous because we are busy, forgetful of the fact that the more business one does at a loss the slimmer will be the bank account at the end of the year.

Prices once broken down are hard to reëstablish, and it is even doubtful if they can be reëstablished.

Furthermore, a manufacturer who once gets the reputation of making cheap goods will find it difficult to obtain good prices even for his best goods, and fine products at good prices are always in fair demand at all times.

There is neither money nor reputation to be gained in doing work for less than a fair price, and the very men who profit by beating the salesmen down and by inducing him to enter their order at cut-throat competition prices, respect him less, and respect his house less, than if he had stuck manfully to the principle that first-class goods demand a fair price.

THE famous Tiffany Chapel re-opened at 333 Fourth Avenue, Tuesday, September 4, and will remain on exhibition daily from 10 A. M. to 4 P. M. until December 1. Cards of admission may be obtained at the office of the TIFFANY GLASS & DECORATING COMPANY, 333 FOURTH AVENUE, NEW YORK, N. Y.

THE OKONITE COMPANY, Limited, 13 Park Row, New York, is doing a good business in its famous insulated wires and cables, and reports that its August sales exceed those for

THE New York Clearing House has recently contracted for what is unquestionably the heaviest vault work ever built in any part of the world. The specifications demand that 5-ply welded Chrome Steel and Iron, made by the Chrome Steel Works, Brooklyn, N. Y., be used in its burglar-proof construction. This well-known material is now, and has for a long time past, been used in the burglar-proof vault-construction of the principal financial institutions in this country and Canada.

THE Okonite Company, Limited, have established a branch at Pittsburgh. This will prove a convenience for many users of Okonite insulated wires, cables and other specialties, and should largely increase the business of the Company in that territory.

BUILDING INTELLIGENCE.

Reported for the American Architect & Building News

ADVANCE RUMORS.

Ambler, Pa.—John J. Houghton is preparing to build 2 dwells. on his property in this borough and Albert Beck has commenced the erection of 4 dwells.

Asbury Park, N. J. — Work will soon be begun on the new Asbury Park and Ocean Grove banking-

Atlantic City, N. J.—George W. Plowman, architect, 1406; Chestnut St., Philadelphia, has made preliminary plans for a theatre and auditorium; frame and brick, movable roof for summer and winter use. Mr. Plowman has also made plans for a hotel.

Austin, Minn. — A Presbyterian Church is pro-jected.

Bradford, Pa. — The City Clerk has been instructed to advertise for plans for a new city-hall.

Bridgeton, N. J. — Ground has been broken for new brick and stone Baptist Church to cost about \$15,000; pastor, Rev. J. Judson Pierson.

Butte, Mont. — A new fire-station will be built.

Carlisle, Mass. — Mrs. Joanna Gleason has given the town \$6,000 with which to build a brick library

ouilding.

Chalfonte, Pa.—Ground has been broken for the new parsonage for the Montgomery Baptist Church.

Cincinnati, O.—J. H. Ball & Co. have made plans for \$20,000 hotel at Milldalle, a Cincinnati suburb.

The Lane & Bodley Co. are to build a six sty brick 40° x 147° addition to their machine-shop, with electric power and lighting-plant. They are receiving bids for same and will send specifications upon application.

Coatesville, Pa.—The Worth Bros. and W. W. Kurtz are each building extensive additions to their iron manufacturing plants.

Columbus, Ga.—A new court-house is under consideration

Columbia, Pa. — Chestnut and Sixth Sts., a new church will be built for the Methodist congregation; Rev. Amos Johnson, minister in charge.

Rev. Amos Johnson, minister in charge.

Connellsville, Pa. — The School Board have decided to build a new eight-room school on 4th St.; a boiler-house will also be built to furnish heat to the present building and also the new one; the Building Committee was instructed to procure plans as soon as possible so that work on the new building can be begun before cold weather; J. R. Balsley is chairman of the Building Committee.

Dayton, O.—George Fair will build 2 stone and frame double dwells, at 2d and Roe Sts. Charles F. Smith will build a three-st'y brick dwell, at Main St. and Forest Ave.

and Forest Ave.

Des Moines, Ia. — The Chamberlain Medicine Co.
will build a \$40,000 business block.

Martin Flynn will build a \$60,000 business block.

Dubuque, Ia. — The Main St. Methodist Society will build a new church, to cost \$60,000; Dr. G. M. Staples may give information.

W. H. Peabody will build a three-st'y brick block at 4th and Main Sts.

Krie, Pa. - Brick store will be built for Joseph Mc-Carter.

Carter.
Fairchild, Conn. — The fire-department is to build a hook and ladder house with hall on second floor.

R HOOK AND IROUTE HOUSE WITH HAIT OF SECOND HOOF.

Frederick, Md. — A three-st'y hose-house, to cost \$4,000, will be built; arch., Wm. H. Baltzell.

Hamilton, Mass. — Some of the prominent members of the Methodist Churches in Beverly are thinking of building a new Beverly Building at Asbury Greys. of but Grove.

Hartford, Conn.—A company has been organized by Col. A. A. Pope and others to manufacture seam-less steel tubes for bollers, bicycle tires, etc., under the Mannesmann process. They will build a factory

here.

Jersey City, N. J.—Plans will be prepared for a new building for the congregation of the Salem Baptist Church.

Alterations will be made to the Emanuel Episcopal Church at a cost of about \$3,000.

Kalamazoo, Mich.—Company C is considering the question of building an armory to cost about \$15,000; a stock company to be formed for the purpose.

Lansdale, Pa. — The Lansdale School Board will goon begin work on a new school, in the west ward of this borough. Lansdowne, Pa.—Plans have been prepared for 2 stores and dwells. for John White and Thomas

Las Vegas, N. M. - A new Masonic Temple will b

(Advance Rumors Continued.)

hnilt h here; also a new normal school to cost \$30,000; & Rapp, Trinidad, Col., are architects of the

Manchester, Mass. — The Unitarian Society may build a new church on the corner of Sea and Tappan Sts.

Minneapolis, Minn. — Joseph Congdon will build a \$44,000 warehouse on North 3d Ave. L. E. Leighton will build a \$12,000 business block at 10 and 12 Central Ave.

New Bedford, Mass. — The Pierce Mfg. Co. will build a brick addition, 106' x 145', 34' high, to its weave-room.

New Britain, Conn. — The Mayor has asked the Fire Commissioners to procure plans and estimates for new engine-house.

for new engine-house.

Newport, R. I.—It is proposed to build a new engine-house for Company No. 5.

The Old Colony R.R. intends to replace the present depot with a new one.

New York, N. Y.—A new theatre, to be called either the Knickerbocker or the New York, and to be managed by Canary & Lederer, is to be built at the n w cor. 42d St and 7th Ave. It is to have a roof garden and probably a hotel in conjunction with it, and is to be completed by May 1, 1895.

Norrietawn Pa.—A meeting has been held by the

Norristown, Fa. — A meeting has been held by the trustees of the Central Presbyterian Church, at which a resolution was passed to appoint a committee to look for a suitable site upon which to build a new church.

new church.

Orange, N. J. — The Shorey Jewish Tefila congregation will build a new synagogue.

Palo Alto, Cal. — The following buildings will be added to Stanford University. A library to cost \$150,000, a natural history museum to cost the same, a memorial chapel, a girls' dormitory to cost \$250,000, a chemical building to cost \$50,000, and a monumental arch. 86' high. 00, a chemical buildi nental arch, 86' high

Paulsboro, N. J. – Capitalists of this place are en-deavoring to secure the removal here of the shoe factory, now operated at Elmer by Thomas Brooks, who employs about 3:0 hands.

Philadelphia, Pa. — E. W. Thorne & F. T. Riley, arch. 1307 Arch St. have plans on boards of a two-st'y stone church; cost not to exceed \$50,000; seating capacity 1,303.

nig capacity 1,300.

Pittaburgh, Pa. — The Emery M. E. Church will build a new church; to cost \$70,000 to \$89,000.

Riverdale, Mass. — The Riverdale Woolen Co. will repair the od mill of the Paul Whiting Mfg. Co., burned in 1889, and also build a new mill, 60° x 120°,

in its rear.

The New York, New Haven & Hartford R.R. will soon build a station here.

Southport, N. C.—A quarantine and marine hospital station, for which Congress has appropriated \$25,000, is to be built at or near this place.

Springfield, Mass. — A one-st'y brick car-shed, 13% x 28%, is to be built by the Street Railway Co., on Boud St.

St. Louis, Mo.—The Union Depot Railway Co. has been granted a permit to construct a car-shed on Virginia Ave., bet. Walsh and Eichelberger Ave.; \$8,000.

Summit, N. J.—A new edifice will be built for Calvary Episcopal Church.

Superior, Wis. — Plans are preparing by G. L. Scho-field for the Finnish Evangelical Seminary, to cost \$75,000.

Taunton, Mass. — The City Council are considering the autuorization of two city buildings to cost \$21,000.

Yonkers, N. Y.—The corner-stone of the new St. Peter's Roman Catholic Church was laid September

ALTERATIONS AND ADDITIONS.

Are, two-sty frame dwell., throof, 20° x 25°; to be raised one-sty, three-sty frame extension, thr roof, 5° x 25°; to be added, internal and other alterations made; \$3,000. own., Peter Hanson, 1106 Third Ave.; arch, H. L. Spicer, 1106 Third Ave.

made; \$3,000. own., Peter Hanson, 1106 Third Ave.; arch, H. L. Spieer, 1106 Third Ave., orn the L. Spieer, 1106 Third Ave., orn the series of the series of

Chicago, Ill.—Charles Dobb, one-st'y brick addition, Lake and Dearborn Sts.; \$10,000.

Lake and Dearborn Sts.; \$10,000.

W. H. Bradley, four-st'y brick addition, 335 La Salle Ave.; \$8,000.

Charles Hrahl, two-st'y brick addition, 210 West Belmont Ave.; \$3,000.

W. J. Bolter, three-st'y brick addition, 3220 Lowe Ave.; \$3,000.

Patrick Loge, three-st'y brick addition, 834-836 Thirty-fifth St.; \$10,000.

Germantown, Pa. — Germantown Road, above Mill St., interior alterations to church; con., Wm. J. Pendletou, Weiss St., above Mill St. — Willow Grove Ave., w s, w S. Martin's Lane, stone choir-room to S. Martin's Church; con., Wm. J. Gruhler, 46 Herman St.

Hatboro. Pa.—Addition to the Hatboro National Bank, 30' x 30', will contain director's room and safe deposit vaults: estimated cost \$10,000; con., Benton S. Russel, Ambler.

S. Russel, Ambier.

Philadelphia, Pa. — Twenty-second St., above Chestnut St., exterior and interior alterations with all modern conveniences to dwells.; plans on boards for contractors' estimates; arch., Hazelhurst & Huckel, Drexel Building, Chestnut and 5th Sts.; own., Edmund D. Lewis.



W. R. OSTRANDER & CO.,

204 Fulton Street, New York.

Manufacturers of

Speaking-Tubes, Whistles, Oral, Electric, Mechanical and Pneumatic Annuciators & Bells, Complete outfits of Speaking-Tubes, Whistles, Electric, Mechanical, and Pneumatic Bells. A full line always in stock. Send for New Catalogue. Factory, De Kalb Ave. near Knickerbocker, Brooklyn, N. Y.



AMES A.MILLER & BRO 129 & 131 S.CLINTON ST. CHICAGO CORRUGATED IRON FOR ROOFING NAND GALVANIZEDI IRON CORNICES AND SIDING. THE HAYES CORRUGATED SKYLIGHT CONDUCTOR PIPE ROOFERS WARRANTED NOT N/A FULL OF ICE.

BUILDING INTELLIGENCE.

(Alterations and Additions Continued.)

Sepvina St., e.s., s Wheatsheaf Lane, interior and terior alterations and raising and moving 4 three-ty brick dwells.; bld., J. C. Stackhouse, 3114 Emerd St.

ald St.

Susquehanna Ave., s w cor. American St., additional st'y on two-st'y morocco factory, 20' x 200'; con., Thomas McCarty, 1935 North 7th St.

North Third St., No. 335, interior and exterior alterations to three-st'y store and office-building and new brick front instead of frame to first st'y of back building; con., W. T. Spofford, 209 Wood St.; own., John M. Miller & Son.

Bainbridge and Twenty-second Sts., s e cor., alterations and two-st'y addition to Bethany Presbyterian Church; about \$10,000; con., A. Shearer, 1707 Christian St.

tian St.

Paschall Ave., n e cor. 73d St., two-st'y brick addition, 40' x 22' 10'', to Industrial Home; con., Paul J. Essick & Sons, 1216 Filbert St.

Chestnut St., n e cor Broad St., estimates are being made in the office of J. E. & A. L. Pennock, 30: Walnut St., for detail work in the addition now being placed on the Girard Building; these are all included in the twelfth story; arch., Addison Hutton & Chas. Hillman, 400 Chestnut St.

Providence, R. I. — Smith St., three-st'y brick addition to Elmhurst Academy; \$10,000; own., Order of Sacred Heart; arch., Martin & Hail; bld., Bowen

& Doane.

it. Louis, Mo. — Five-st'y addition to factory, 85' x 15', Vallentine St., bet. Third and Fourth Sts.; \$40,000; own., Drunnmond Tobacco Co.

Five-st'y addition to factory, 22' x 144', Morgan St., bet. 17th and 18th Sts.; \$6,000; own., Moran Bros.

Addition to store, Lafayette St., bet. 18th and Mississippi Sts.; \$4,000; own., McKormick-Kilgen Rule Real Estate Co.

APARTMENT-HOUSES.

Baltimore, Md. — Four-st'y brick apart., 26' x 100', 1003 North Charles St.; own., A. L. Gorter, 16 East Chase St.

Chase St.

Chicago, Ill. — Miss Fitzgerald, three-st'y brick flats, 286 Honna Ave.; \$8,000.
John Arvens, two-st'y brick flats, 1216 Fifteenth St.; \$3,300.
Hawtree & Rhodes, 2 two st'y brick flats, 6225-6227 Grant Pl.; \$7,000.
W. H. Thomas, two-st'y brick flats, 3250 Paulina St.; \$3,000.
James Byons, two-st'y brick flats, 5648 Drexel Ave.; \$3,700.
B. Scanlen, three-st'y brick flats, 4040 Wabash Ave.; \$8,000.

James Byons, two-st'y brick flats, 5648 Drexel Ave.; \$3,700.

B. Scanlen, three-st'y brick flats, 4040 Wabash Ave.; \$5,000.

H. S. Newton, three-st'y frame flats, 1191-1193 Butler St.; \$3,000.

George Mehring, three-st'y brick flats, 4619 Vincennes Ave.; \$12,000.

Mr. Lew. three-st'y brick flats, 1126 Belmont Ave.; \$6,000.

Ole. Hansen three-st'y brick flats, 380 North Fairfield Ave.; \$5,000.

Mrs. Josephine Madden, four-st'y brick flats, 137-139 Thirtieth St.; \$17,000.

Martin Lewis, three-st'y brick flats, 256 Burling St.; \$3,500.

James Egholm, two-st'y brick flats, 6616 Maryland Ave.; \$3,000.

John Tait, two-st'y brick flats, 4946 Forrestville Ave.; \$6,000.

New York, N. Y. — East Twelfth St., No. 512, five.

Ave.; \$6,000.

New York, N. Y.— East Twelfth St., No. 512, five sty brick flats, 25' x 91', 59' high, flat tin roof; \$23,000; own., John Richard, 512 East 12th St.; arch., Max Muller, 21 Centre St.

East One Hundred and Thirteenth St., No. 152, five-sty brick flats, 25' x 87', 54' 9" high, flat tin roof; \$18,000; own., Sarah J. Steele, 112 East 10ith St.; arch., U. Steinmitz, 416 West 149th St.

Eighth Ave., No. 2666, five-sty brick flats, 25' x 89', 59' high, flat ter or gravel roof; \$25,000; own., William Prolgers, 307 Putnam Ave.; arch., De Lemos & Cordes, 130 Fulton St.

BUILDING INTELLIGENCE.

(Apartment Houses Continued.)

(Apartment Houses Continued.)

One Hundred and Thirty fourth St., n s. 315' w
Park Ave., 2 five-sity brick thats, 50' x 78', 58' high,
flat tin roofs: \$36,000; own., John Regan, 1:9 East
119th St.; arch., Andrew Spence, 153 East 125th St.

One Hundred and Thirty-sixth St., n w cor. 5th
Ave., 8 five-st'y brick flats, 24' x 25' x 81', 57', 59'
high, flat tin roofs; \$200,000; own., William Lyman,
54 East 122d St.; arch., John Hauser, 1441 3d Ave.

54 East 122d St.; arch., John Hauser, 1441 3d Ave.

St. Louis, Mo. — Two flats; \$4,000; C. Greim.
Two flats; \$6,500; own., M. Glasker.
Flats; \$3,400; own., E. Doerflinger.
Flats; \$3,000; own., C. Ewing.
Two flats; \$3,000; own., E. Murphy.
Flats; \$3,800; own., H. League.

St. Paul, Minn. — Twelfth St., n s, bet. Robert and Jackson Sts., three-st'y brick flats; \$20,000; own. and bld., Lovene & Anderson; arch., C. Johnson.

CHURCHES.

Chicago, Ill.—The Chicago Missionary Society, one-st'y brick church, 83 87 Courtland St.; \$2,300.
T. A. Kearns, one-st'y brick church, 417-419
Thomas St.; \$10,000.
St. Peter and Paul Church, one-st'y brick church, 213-215 Washington St.; \$2,000.

Clarion, Pa. — Plans for a church for the congrega-tion of the First Presbyterian Church have been prepared by arch., John L. Beatty, 36 Sixth Ave., Pittsburgh.

Denver, Col. — Brick and stone church; pastor, J. D. Kennedy; arch., John L. Beatty, 36 Sixth Ave., Pittsburgh, Pa.

Fort Washington, Pa. — Stone Gothic Church for a Reformed congregation; seating capacity about 700 people; about \$25,000; arch., T. Frank Miller, 1221 Arch St.

Galveston, Tex. — Thirty-sixth St. and Ave. L. Grace Episcopal Church; \$30,000; Rev. H. Carter, Rector; arch., N. J. Clayton & Co.

arch., N. J. Clayton & Co.

St. Louis, Mo. — Evang. Luth. Church, Benton and
21st Sts.; \$48,800; bid., J. A. Dries.
Cote Brilliant Church, Marcus and Labadie Sts.;
\$14,500; bid., R. P. McClure.

St. Paul, Minn. — Portland Ave. and Millon St.,
brick and stone St. Clement's Memorial Episcopal Church; \$25,000; arch., Cass Gilbert; bid., F. J.
Romer.

EDUCATIONAL.

Bayfield, Wis.—High-school building; \$25,000; arch., Van Ryn & Lesser, Milwaukee, Wis.

Van Ryn & Lesser, Milwaukee, Wis.

Boston, Mass. — Richmond St., Ward 2i, threest'y brick school., with stone trimmings, flat roof.
90' x 170'; \$100,000; own., City of Boston; arch.,
Edmund M. Wheelright.

New York, N. Y. — One Hundred and Nineteenth St.,
n e cor. Madison Ave., four st'y brick public school
building, 175' x 62'. 31' high, peak and flat slate
and asphalt roof; \$165,000; own., Mayor, Aldermen
and Commonalty, City-hall; arch., C. B. J. Snyder,
146 Grand St.

Philadelphia, Pa. — Tioga St., s e cor. Howard St., two-st'y brick school., 148" x 54"; \$38,000; con., Jacob Wenzelberger, 1220 Filbert St.

Tamaqua, Pa. – Two-st'y brick school.; \$25,000; own., Tamaqua School Board.

Tower City, Pa.—Two-st'y brick school.; \$12,500; arch., Riley.

Wausau, Wis. — Three public schools.; total, \$35,000; arch., Van Ryn & Lesser, Milwaukee, Wis.

ENGINE-HOUSES.

Buffalo, suffalo, N. Y.— Martin and Tonawanda Sts., fire-house; \$8,000; own., Board of Public Works; arch., F. W. Humble.

FACTORIES.

Chicago, III — E. Fecher, two-st'y brick brewery, 862-869 Dudley St.; \$8,000.

Miller Hendricks & Co., three-st'y brick factory, n w cor. Union Ave. and 41st St.; \$17,00\. Chicago Gas Light & Coke Co., brick boiler-house, 2423-2423 Main St.; \$3,000.

(Factories Continued.)

(Factories Continued.)

New York, N. Y.— East Forty-eighth St., No. 189, five-st'y brick manufactory, 19' x 96', 58' high, flat tin roof; \$5,000; own., Peter A. Cassidy, 249 East 49th St.

West Sixty-fourth St., Nos. 319-323, five-st'y brick factory, 54' x 190', 69' high, flat gravel roof; \$30,000; own., H. Rabe & Sons, 474 West 14th St.

Seventy-second St., a s, 198' e Avenue A, six-st'y brick factory, 70' x 98', 77' high, flat asphalt roof; \$60,000; own. and arch., Gottfreid Knoche, 501 East 71st St.

Fort Washington Bridge Road and One Hundred and Eighty-ninth St., one-st'y brick workshop, 28' x 68', 37' high, peak tin roof; \$4,000; own., Geo. G. Barnard, 330 West 57th St.; arch., Edw. P. Casey, 171 Broadway.

St. Louis, Mo.—Factory, Olive and 19th Sts.; \$3,700;

St. Louis, Mo. — Factory, Olive and 19th Sts.; \$3,700; own., D. K. Ferguson; bld., R. W. Morrison. Factory, Jefferson and Wyoming Sts.; \$4,600; own., Aug. Schmidt; bld., J. Fischer. Factory, Branch and 2d Sts.; \$16,000; own., Henry Timken; bld., A. Benke.

HOTELS.

Meriden, Conn. — Four-st'y frame and brick hotel with theatre, dance hall, bowling alley, tower, etc., pitch roof, 58'x 147'; own, M. J. Murphy & Co.; arch., Jos. A. O'Brien, Bridgeport.

Pine Bluff, Ark. — Third Ave., hotel; \$13,850; own., E. Miller; arch., Gibbs; bld., Pat. Powers.

HOUSES.

HOUSES.

Allegheny, Pa. — A brick dwell. will be built from plans prepared by Moesser & Bippus, Pittsburgh; own., J. C. Lappe.

Baltimore, Md. — Twelve two-st'y brick dwells., s s, Hollins bt. beg. s w cor. Payson St.; own., Robt Brooks, 1218 Hollins St.

Three-st'y brick dwell., n e cor. Guilford Ave. and Biddle St.; own., Mary E. Lynch, 1115 Guilford Ave.

Three-st'y brick dwell., s s, Hamburg St., w Hanover St.; own., Henry Krauss.

Six two-st'y brick dwells, e s, Light St., n Clement St.; 4 two-st'y brick dwells, s s, Light St., n Clement St.; 4 two-st'y brick dwell., n e cor. Light and Clement Sts.; own., George C. Goldman, 1211

North Broadway.

Twelve two-st'y brick dwells., e s Payson St., n Harlem Ave.; own., W. J. Armiger, 2232 Barclay St.

Lauvale and Federal Sts; own, S. D. Price, 506
East Chase St.
Three-st'y brick dwell., 157 Rogers Ave.; own.,
Luther M. Reynolds, 213 Courtland St.
Seven two-st'y brick dwells, es Port St., and 5
two-st'y brick dwells, s s Fairmount Ave.; own.,
Jos. Schamberger. 2215 East Baltimore St.
Five two-st'y brick dwells, es Mountford Ave,
and 6 two-st'y brick dwells, ws Port St., n Baltimore St.; own., Chas. Milske, 233 n Patterson Park
Ave.

Ave.

Brooklyn. N. V. — Fifty-third St., s s, 240' w 3d
Ave., 2 three-st'y frame dwells., tin roofs, 20' x 52';
\$1,000 each; own., Albert L. French and H. V. Nelson, 88 Fifty-seventh St.; arch., H. L. Spicer, 1106
Third Ave.
North Henry St., w s, 185' n Nassau Ave., threest'y frame dwell., gravel roof, 20' x 50'; \$3,000; own.,
I. F. Gebhardt. 227 Nassau Ave.; arch., Gustave
Erda, 142 Franklin St.
Ocean Ave., w s, 200' s Avenue A, two-st'y and
attic frame dwell.

stria, 142 Franklin St.

Ocean Ave., w s, 200's Avenue A, two-st'y and attic frame dwell., shingle roof, 30' x 48'; \$6,000'own., Geo. M. Boardman, 234 Greene Ave.; bld., W. A. Forman.

A. Forman.

Linden Ave., n. s. 150' e Nostrand Ave., two-st'y and attic frame dwell, shingle roof, 24' x 38'; 85,000; own., arch. and bld., Guy K. McKeachie, 178 Hawthorne St.

Halsey St., s. s. 120' w Hamburg Ave., 5 two-st'y and basement frame dwells., tin roofs, 20' x 45' 8'; \$2,500 each; own., arch. and bld., Chas. F. Gastmeyer, 1172 Jefferson Ave.

Hart St., s. s. 225' e Throop Ave., 5 three-sty and basement brick dwells., tin roofs, 16' x 45'; \$4,000 each; own. and bld., Kennard Buxton, 44 Court St., Room 53.

Hart St., n. s. 200' e Sthuyesant Ave.

Hari St., ss. 225'e Throop Ave., 5 three-st'y and basement brick dwells., tin roofs, 16' x 45'; \$4,000 each; own. and bid., Kennard Buxton, 44 Court St., Room 53.

Hart St., n s, 200' e Stuyvesant Ave., four-st'y brick dwell., tin roof, 28' x 72'; \$10,000; own. and bid., Henry Roth, 782 Broadway; arch., Henry Vollweller, 4*3 Hart St.

Linden St., n s, 175' e Wyckoff Ave., 3 three st'y brick dwells., tin roofs, 25' x 60'; \$4,500 each; own., R. B. Muller, St. Nicholas Ave.; arch., F. J. Lessing, 412 Evergreen Ave.

Linden St., n s, 100' e Wyckoff Ave., 3 three-st'y brick dwells., tin roofs, 25' x 60'; \$4,500 each; own., R. B. Muller, St. Nicholas Ave.; arch., F. J. Lessing, 412 Evergreen Ave.

Schenck St., w s, 80' n De Kalb Ave., four-st'y brick dwell., tin roof, 20' x 52'; \$6,000; own. and bld., John F. Reilly, 131 Fifth Ave.; arch., W. M. Coots, 189 Montague St.

Greene Nt., s, 150' w Oakland St., three-st'y frame dwell., gravel roof, 25' x 55'; \$4,200; own. and bld., Patrick Kiernan, 206 Greene St.; arch., P. Tillion, 209 Manhattan Ave.

East Twenty-first St., e s, 208' 4" s Avenue C, two-st'y and attic frame dwell., shingle roof, 27' x 36'; \$4,400; own., Mary T. Weber, Pacific St.; arch., Wm. A. Mundell, Phenix Building; bld., Benj. Driesler, Flatbush Ave. and Avenue C.

Hall St., n s, 25' e Stone Ave., 4 three-st'y brick dwells., 25' x 55', tin roofs; \$6,000 each; own., John L. Bough, 12 Warwick St.; arch., Chas. Infanger, Atlantic and Georgia Aves.

Bay Sizteenth St., n s, 22' n Bath Ave., two-st'y and attic frame dwell., 21' x 40', shingle roof; \$4,500; own. and arch., L. F. Wood, Bay Sixteenth St., Bath Beach.

Thirty-fourth St., n s, 336' e 3d Ave., three-st'y frame dwell., 24' x 50', tin roof; \$3,500; own. and arch. L. Roots 2' x 50', tin roof; \$3,500; own. and arch.

own. and arcn., L. F. wood, Bay Sixteenth St., Bath Beach.

Thirty-fourth St., n s, 336' e 3d Ave., three-st'y frame dwell., 24' x 50', tin roof; \$3,500; own. and arch., H. Spier, 267 53d St.

Seventy-seventh St., s s, 562' e 4th Ave., two-st'y and attic frame dwell., 18' x 40', shingle roof: \$3,000; own., arch. and bid, Geo. N. Thurston, 183 Fifty-ninth St.

Belmont Ave., n s, 40' e Chestnut St., 2 two-st'y frame dwells., 21' 6' x 25', shingle roofs; \$2,200 each; own., W. H. Miles, 510 Franklin Ave.; bid., Peter G. Kerr, 947 Belmont Ave.

Fiftieth St., n s, 100' w 13th St., two-st'y and attic frame dwell., 22' x 30', shingle roof; \$3,800; own., A.



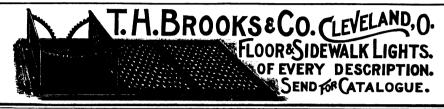
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quired repainting for 10 to 15 years.

If you need any paint it will pay you to send for circular.

JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.



BUILDING INTELLIGENCE.

(Houses Continued.)

BUILDING INTELLIGENCE.

(Houses Continued.)

E. Tompkins, West Brooklyn; arch. and bld., Wm. E. Kay, Blythebourne, L. I.

Fifty-seventh St., ns 300's 5th Ave., two-st'y and basement frame dwell., 20' x 42', tin roof; \$3,000; own., Mrs. Franko, 57th St., near 5th Ave.; arch., R. R. Raymond, 24d bean St.

Third Ave., w s, 30's Bay Ridge Ave., three-st'y frame dwell., 20' x 50', tin roof; \$3,000; own., Geo. Self. 3d and Bay Ridge Aves.; arch., H. L. Spicer, 1106 3d Ave.

Glenmore Ave., n s, 20' w Milford St., 6 three-st'y frame dwells., 18' 8'' x 30', tin roofs; \$2,000 each; own., Fanny S. Max., 598 Barbey St.

McKibben St., n s, 175' w Bushwick Ave., four-st'y brick dwell., 25' x 65', tin roof; \$7,000; own., Geo. Seetz, 183 McKibben St.; arch., Hugo Smith & Co., 10 Moore St.

South Portland Ane., e s, 475' n Lafayette Ave., our-st'y brick dwell., 25' x 73', asphalt and gravel roof; \$14,000; own., Adolph C. Wenzel, 66 St. Felix St.; arch., M. J. Morrill, 35' Felixon St.

South Third St., s s, 150' e Marcy Ave., three-st'y brick dwell., 25' x 65', tin roof; \$6,500; own. and bld., Geo. W. Ihrig. 278 South 3d St.

Decatur St., s s, 316' e Raiph Ave., 8 two-st'y and basement brick dwells, 18' x 22', tin roofs; \$4,500 each; own., Chas. G. Reynolds, 193 Ralph Ave; arch., Henry B. Hill, 193 Ralph Ave.

Bainbridge St., n s, 60' w Hopkinson Ave., 2 three-st'y brick dwells., 20' x 60', tin roofs; \$4,000 each; own. and bld., John F. Graham, 373 Fulton St.

Bainbridge St., s s, 85' e Howard St., 3 two-st'y and basement brick dwells., 20' x 45', tin roofs; \$4,000 each; own. and bld., E. Soderstrom, 287 Prospect Pl.; arch., W. Bailh Ave., Pacific St., s s, 75' w Vanderbilt Ave., 2 four-st'y brick dwells., 20' x 52', tin roofs; \$3,500 each; own. and bld., Daniel Fink, 376 Himrod St., 3 rch., W. B. Wills, 504 Hart St.

North Eighth St., n s, 100' w Berry St., three-st'y frame dwell., tin roof., 25' x 52', \$4,000; own., G. Lober, 113 North St. sto., H. Vollweiler, 483 Hart St., ibd., Franz Herte, 57 Harrison Pl.

Hawlower St., n s

St. Fourth Ave., s e cor. 53d St., three-st'y brick dwell., tin roof, 20' x 55'; \$4,500; own., Mr. Halsted, 3d Ave. and 53d St.; arch., H. L. Spicer, 1106 Third

Ave. Ocean Ave., e s, 299' 7\frac{7}{2}" n Avenue D, two-st'y and attic brick dwell., slate roof, 31' x 35'; \frac{8}{3},500; own., Adeline Van Ness, 100 Albany Ave.; arch., Parfitt Bros., Court St.; bld., Van Ness Bros., 100 Albany

Bros., Court St.; bld., Van Ness Bros., 100 Aldany Ave.

Market St., es, bet. Weldon and Magenta Sts., 11 two-st'y frame dwells., tin roofs, 18" x 32"; \$1,500 each; own. and bld., E. W. Lauer, 62 Miller Ave.; arch., A. Lacrolx, 2790 Fulton St.

Park Pl., w s, 255' e Vanderbilt Ave., 7 two st'y and basement brick dwells.. tin roofs, 18" x 43"; total, \$30,000; own. and bld., Wm. H. Reynolds, 320 Washington St.

Sutton St., es, 153' 9" e Driggs Ave., 5 three-st'y frame dwells., gravel roofs, 25" x 56"; \$4,700 each; own., arch. and bld., O. W. Humpirey, 40 Driggs Ave. Bay Twentieth St., s s, 250' e Benson St., two-st'y and attic frame dwell., 36" x 44", shingle roof; \$4,000; own., Gilbert Hoffman, Bath Beach; arch., A. F. Barber.

BUILDING INTELLIGENCE.

(Houses Continued.)

(Houses Continued.)

Buffalo, N. Y. — Crescent St., No. 252, two-st'y frame dwell.; \$7,500; own., Chas. Boyet; arch., F. W. Fisher; bld., Gardner Bros.

Main Nt., Nos. 2732, 2780, 2330, 3 two-st'y frame dwells.; \$8,000 each; own., Buffalo Cement Co.

Delaware St., No. 1109, two-st'y frame dwell.; \$11,000; own., John Gordon; arch., Green & Wicks; bld., Jos. Metz.

Auburn Ave., Nos. 692-700, 2 two-st'y frame dwells.; \$4,500 each; own., arch. and bld., Buffalo Bullding and Investment Co.

Camden, N. J. — Carman St., above Haddon Ave., 5 dwells.; own., P. J. Farley, 600 Federal St. Chestnut St., No. 126, two-st'y brick dwell.; bld., W. Ross, 1146 Sycamore St.

Chestnut St., No. 126, two-st'y brick dwell.; bld., W. Ross, 1146 Sycamore St.

Chicago, 111. — M. O. Tremaine, 2 two-st'y brick dwells, 48.7-482 Forrestville Ave.; \$13,000.

Charles Cessna, 5 two-st'y frame dwells., Clinton Ave., nr. Diversy Ave.; \$9,000.

Samuel Brown, Jr., 4 frame cottages, Cosgrove Ave., nr. Leavitt St.; \$4,000.

H. Veeder, two-st'y brick dwell., 4841 Vincennes Ave.; \$7,000.

C. G. H. Anderson, three-st'y brick dwell., 620 Shober St.; \$5,000.

J. M. Smith, two-st'y brick dwell., 5217 Lexington Ave.; \$10,000.

P. J. Schreiner, two-st'y brick dwell., 4942 Forrestville Ave.; \$3,000.

F. E. Fry. two-st'y frame dwell., 2387 North Halsted St.; \$4,000.

J. S. Mahoney, two-st'y brick dwell., 1294 Sheffield Ave.; \$7,000.

Chas. Farnsworth, two-st'y frame dwell., 4112 Milwaukee Ave.; \$3,000.

F. Faymonville, three-st'y frame dwell., 1234 Diversy Ave.; \$3,000.

Chas. Bradt, two-st'y frame dwell., 1356 Fulton St.; \$5,200.

J. W. Kilmore, two-st'y brick dwells., 1428 Washington St.; \$6,000.

Chea. Bradt, two-st'y brick dwells., 1428 Washington St.; \$6,000.

Chea. Bradt, two-st'y brick dwells., 1428 Washington St.; \$6,000.

Chea. H. Aller W. Petroell St., e., bet. 8th and Phillip Sts., two-st'y double brick dwell.; \$8,000; own. and

Cincinnati, O.—Purcell St., e s, bet, 8th and Phillip Sts., two-st'y double brick dwell.; \$8,000; own, and bld., John W. Robinson; arch., John Striker.

Dayton, O.— Second St., cor. Roe St., frame dwell.; \$8,000; own., Geo. N. Fair; arch., Acton & Herby; bld., Chas. Hooven.

Doylestown, Pa. — Ground has been broken by contractor William Hager for an eighteen-room dwell. for Owen Croman.

Evanston, Ill.—Stone dwell., 50' x 80'; about \$30,000; own., H. W. Jones; arch., S. A. Jennings.

Frankford, Pa.— Duncan St., ws, s Stiles St., 2 two-st'y brick dwells. with frame back buildings; own., Smedley & Bro.

Germantown, Pa. — Sprague St., e s, below Chelten Ave., 2 two-st'y brick dwells.; con., Wm. S. McNabb,

iermans
Ave., 2 two-st'y brick dwens., com, ...
Mill St.
Hieskel St., e s. n Mill St., 3 two-st'y brick dwells.;
con., Joseph A. Buzby, 5153 Wakefield St.
Mechan Ave., n s. w Chew St., 2 three-st'y brick
dwells. with back buildings; own., Frank Richards,
4 Good St.

Gonn. — Girard Ave., 2 two-and-one-half-

Hartford, Conn. — Girard Ave., 2 two-and-one-half-st'y frame dwells., 30' x 49', and 28' x 48' respectively; own., Edw. E. Boyd, New Haven; bld., Geo. L. Austin, New Haven.

Ausha, Nowne, Pa. — Stone and frame dwell.; own., F. G. Janveir; arch., Isaac Pursell, 119 South 4th St., Philadelphia.

Lancaster. Pa. — Stone dwell.; \$25,000; own., D. P. Watt; arch., C. Emlen Urban; bld., R. Morew.

Watt; arch., C. Emlen Urban; bld., R. Morew.

Maywood, Ill. — Twenty frame dwells.; \$48,000;
own., Proviso Land Ass'n.; arch., F. R. Schock.

Mount Alverno, Pa. — Three-st'y frame dwell.,
shingle roof; own., Wm. Barnett, Jr.; arch., Day &
Coates, 910 Drexel Building.

New Haven, Conn. — Wall St., near Orange St.,
two.and-one-half-st'y brick and stone dwell., 38' x
51'; \$12,000; own., Seth H. Mosely; bld., E. H.
Sperry & G. W. Clark; arch., L. W. Robinson.

New London, Conn. — Winthrop St., frame dwell,
of 18 rooms, all modern conveniences; own., Gilbert
Bishop; arch., Gilbey & Son.

New York, N. Y. — Forty-seventh St., 3504' w 11th
Ave., three-st'y brick and frame dwell., 49' x 56', 27'

(Houses Continued.)

(Houses Continued.)
high, flat asphalt roof: \$3,000; own, E. C. Ludin, s w cor. 11th Ave. and 38th 8t.; arch., Joseph Wolf, 1 Madison Ave.

Ninety-minth St., n e cor. 1st Ave., three-st'y brick dwell., 25' x 35', 39' high, flat tin roof; \$3,500; own., Albert Crane, 35 Wall 8t.; arch., John Hauser, 14t1 Third Ave.

Nedgwick Ave., w s, 25' n Perot St., three-st'y brick and frame dwell., 25' x 37', 32' high, peak shingle roof; \$3,200; own., Mrs. Kate C. Hemphill, Kingsbridge; arch., Chas. H. Sparry, Fordham Heights.

shingle roof; \$3,200; own., Mrs. Kate C. Hemphill, Kingsbridge; arch., Chas. H. Sparry, Fordham Heights.

One Hundred and Fifty-second St., s e cor. West Boulevard, 6 four-st'y brick dwell., 16' x 52', 43' high, flat in roof; \$95,000; own., Ward Wheeler, 227 West 38th St.; arch., Henry Fouchaux, 11th Ave. and 1624 St.

Union Ave., s w cor. 156th St., three-st'y brick and frame dwell., 20' x 40', 35' high, peak shingle roof; \$7,000; own., Annie Leahy, Denman Pl., Fordham; arch., Michael J. Garvin, 3311 Third Ave.

Chisholm St., e s, 233' s Jennings St., three-st'y brick and frame dwell., 20' x 32', 30' high, flat tin roof; \$3,000; own. and arch., Joseph E. Butterworth, 3336 Third Ave.

One Hundred and Seventeenth St., n s, 40' e Amsterdam Ave., 6 three-st'y brick dwells., 18' x 50', 57' high, flat tin roof; \$120,000; own., Carrie S. Kennedy, 19 West 74th St.; arch., Neville & Bagge, 217 West 125th St.

Fordham Pl., 175' w Grand Ave., three-st'y stone and frame dwell., 24' x 47', 3'y high, peaked shingle roof; \$5,000; own., Elizabeth A. McMullin, 242 East 49th St.; arch., Peter M. Harders, White Plains.

Opdyke St., ns, 300' e Katonah Ave., three-st'y brick and frame dwell., 3.' x 46', 40' high, peaked slate and tin roof; \$5,000; own. Robert Caterson, 105 East 85th St.; arch., John C. Babcock, Woodlawn.

Bricant Ave., 325' n Freeman St., two-st'y stone

lawn.

Briant Ave., 325' n Freeman St., two-st'y stone and frame dwell., 20' x 40', 20' high, flat tin roof; \$3,500; own., John Nelson, 626 East 144th St.; arch., Alex C. McCone, 1302 Kyse Ave.

Bathgate Ave., s e cor. 173d St., three-st'y stone and frame dwell., 16' x 40', 36' high, flat tin roof; \$5,000; own., Josephine L. Peyton, 236 West 13th St.; arch., Edwin R. Will, 137 Broadway.

Ninety-third St., n s, 85' w West End Ave., 2 four-st'y brick dwells, 20' x 58', 53' high, flat tin roofs; \$50,000; own. and arch., Alonzo B. Knight, 673 West End Ave.

\$50,000; own. and aren., Alonzo B. Knight, 613 west End Ave.

Morris Aee, w s, 50'n Buckhont St., three-stly stone and frame dwell., 21'x 47', 37½' high, peaked shingle roof; \$3,500; own., Anna H. Bedford, 371 Mount Hope Pl.; arch., Joseph T. Bedford, 371 Mount Hope Pl.; arch., Joseph T. Bedford, 371 Mount Hope Pl.; arch., Joseph T. Bedford, 371 Mount Hope Pl.; 5eventy-second St., 100' w West End Ave., 3 fourstly brick dwells., 25' x 65' x 69', 56' high, flat tin roof; \$0,000; own. and arch., Henry F. Cooke, 264 Columbus Ave.

Seventy-first St., s s, 225' w West End Ave., 3 three-stly brick dwells., 17' x 55', 41' high, flat tin roof; \$15,000; own., William Bradley, 5 6 West 48th St.; arch., Arthur J. Horgan, 331 West 71st St.

Philadelphia, Pa. — Mascher St., ws. n Ontarlo St., 13 two-st'y dwells, and a store and dwell, with back buildings; con., John M. Whelan, 240 Glenwood

Philadelphia, Pa. — Mascret St., ws. in obtains St. 13 two-st'y dwells, and a store and dwell. with back buildings; com., John M. Whelan, 240 Glenwood Ave.

Oyden St., n., 69' 3'' e 50th St., 22 two-st'y brick dwells.; own., Hunter & Jones, 543 Drexel Building. Penn St., as, w. Green St., 2 three-st'y stone and brick dwells. with back buildings; con., Charles S. Johnson, 429 East Chelten Ave.

Norris St., near 30th St., 14 three-st'y brick and brownstone dwells. with back buildings; own., E. P. Jennison, 1819 North 18th St.

Owen St., Nos. 527-529, 2 two st'y brick dwells. with back buildings; con., David S. McClure, 827 Reed St.; own., Frederick Mayer.

Wharton St., ns., e Guenther St., 2 two-st'y and 1 three-st'y brick dwells. with brick buildings; own., Timothy F. Gallagher, 1727 South 18th St.

Carlisle St., e and w. s. n Allegheny Ave., 24 two and three-st'y brick dwells., all with back buildings; own., M. J. Helst & Son, 816 Lehigh Ave.

McClellan St., No. 1110, two st'y brick dwell. with back building; own., George W. Morris, 1112 McClellan St.

Pilling St., n ws., n e Adams St., 4 two-st'y brick dwells. with back buildings; con., Osborne Bros., 5017 Willow St.; own., John T. Thompson.

Harrison St., n and s., from Hancock to Master Sts., 26 three-st'y stone and brick stores and dwells., and 2 three-st'y stone and Philellena Sts., Germantown.

Clearfield St., n s., e Wayne Ave., 12 two-st'y brick dwells. with back buildings; own., Weekey, Dade & Noble, Green and Philellena Sts., Germantown.

Clearfield St., n s., e Wayne Ave., 12 two-st'y stone and brick dwells. with back buildings; own., and blick wells. William G. Serrill, 1748 North 15th St.

Lehigh Ave., n. s., bet. 16th and Hicks St., 14 three-st'y brick dwells. and 1 store and dwell. with back buildings; blick, Andrew Hughes, 1228 E

St. policings; bit., Andrew Hughes, 2128 Elisworth St. Supplee St., 8 s, w 53d St., 15 two-st'y brick and brownstone dwells. with back buildings; own., Robert Manley, 5010 Master St.

Fifteenth St. and Passyunk Ave., and McKean and Broad Sts., 19 three-st'y brick and stone dwells. with back buildings, also 4 three-st'y brick and stone stores and dwells. with back buildings; own. and bld., John M. B. Morrow, Jackson and 13th

Sts. Brewster Pl., n s, Ward 28, 16 two-st'y brick dwells. with back buildings; con., D. R. Evans, 3343 Uber St. Twentieth St, e s, s Westmoreland St., 4 two-st'y brick dwells. with back buildings; con., D. R. Evans, 3343 Uber St. Diamond St., n s, w 32d St., 10 three-st'y brick and brownstone dwells. with back buildings; own., James H. Stevenson & Son, Diamond St. and Ridge Ave.

James H. Stevenson & Son, Diamond St.

Ave.

Marshall St., No. 2935, two-st'y brick dwell.;
own., Bernhard Ernst, 2920 North 6th St.

Henry St, s s. w Mascher St., 5 two-st'y brick
dwell.; con., John M. Whelan, 240 Glenwood Ave.

Forty-first St., w s. n Ogden St., three-st'y brick
dwell. with back building; con, Wm. J. Shedwick
& Bro., 2410 Mt. Vernon St.

Lehigh Ave., s s, from Willington St. to 16th St.,
15 three-st'y brick dwells. with back buildings;

(Houses Continued.)

wn. and bld., William G. Serrill, 1748 North 15th

(Houses Continued.)

own. and bld., William G. Serrill, 1748 North 15th St.

Sixteenth St., e. s. 79 n Lehigh Ave., 6 three-sty brick dwells. with back buildings; own. and bld., Wm. G. Serrill, 1748 North 15th St.

Mifflin Nt., Nos. 1929-33, 3 two-sty brick dwells. with back buildings; own., Charles F. Gallagher, 1923 Mifflin St.

#iffy-third St., w s., n Haverford Ave., 4 two-sty brick dwells. with back buildings; bld., W. A. Patterson, 5124 Vine St.

#raad St., w s., above Westmoreland St., 4 three-sty and 1 four-sty brick and brownstone dwells.; own., J. C. Lyneb, 3301 North Broad St.

Westmoreland St., s. s. above Broad St., 6 three-sty brick and brownstone dwells.; own., J. C. Lyneb, 3301 North Broad St.

Carlisle St., e. s. near Westmoreland St., three-sty brick and brownstone dwells.; own., J. C. Lyneb, 3301 North Broad St.

Manut Moriah and Greenway Aves., two-sty and mansard roof brick dwell., 20' x 32' with back building, 14' x 16'; own., William Crothers; con., George Kyle, F Avenue and 75th St.

Uxford St., n s. e Front St., 2 two-sty brick dwells.; own., John H. Clark; con., Charles C. Patterson, 2836 North 9th St.

Metrose St., ss. w5th St., 3 two-sty brick dwells.; con., W. A. Patterson, 5424 Vine St.

Forty-sixth-and-three-quarters St., ws. s Woodland Ave., 16 two-sty brick dwells. with back building; own., E. E. Nock, 5400 Lancaster Ave.

Palmetto St., w s., 8 Devereaux St., two-and-a-half-sty brick dwell. 28' x 30', with frame back building; own., E. E. Nock, 5400 Lancaster Ave.

Buist Ave., n e cor. 79th St., two-sty frame dwell. with back building; own., and bld., John Stafford, 1606 Susquebanna Ave.

Newtirk St., e and w s, n Oxford St., 40 two-sty brick dwells. with back buildings; own. and bld., John Stafford, 1606 Susquebanna Ave.

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Newtirk St., e and w s, n Oxford St., 40 two-sty brick dwells. with back buildings; own. and bld., John Stafford, 1606 Susq

Ashon Road, above Willits Road, two-and-a-halfst'y frame dwell.; own., Patrick Smith, 3124 Richmond St.
Comly St., s w s, s e Tacony St., 2 two-st'y brick
dwells. with frame open porch; con., H. P. Castor,
5811 Torresdale Ave.
Haverford St., n s, e Merion Ave., two-st'y brick
dwell. with back building; own., M. Kennedy,
Haverford Ave. and 58th St.
Filtcher St., n s, 1111' e 28th St., 2 two-st'y brick
dwells. and 2 two-st'y brick stables; own., Frank
Halmbach and Louis Paul. 2 44 North 29th St.
Fifty-serenth St., w s, 100' s e Woodland Ave., 3
two-st'y brick dwells; own., H. W. Urian, 5518
Woodland Ave.
Humboldt St., s s, e G St., 2 two st'y brick dwells.
with back buildings; own., Hiram Cook; con., Jos.
Heaton, 3941 Marshall St.
North Sizty-sixth Are., No. 604, three-st'y frame
dwell. with back building; bld., R. J. Kirby, 334
South 15th St.
Twoffth St., w s, 148' 2" s Dickinson St., three-st'y
brick dwell. with back building; own., John O'Dounel, 1161 South 13th St.
York St., s s, w 32d St., 11 two-st'y brick dwells.
and 1 two st'y brick store and dwell; own., J.
Franklin Moss, 2340 North 29th St.
Lehigh Are., n s from 16th St. to Hicks St., 14
three-st'y brick dwel's.; con., Wm. G. Serrill.
Clearfield St., n s, w 29th St., 5 two-st'y brick
dwells.; own., Louis Roseman.
Pittsburgh, Pa. — Meriden St., Ward 35, 3 dwells.
\$8,000; own., J. McCarty; bld., Martsoff Bros.

dwells.; own., Louis Roseman.

Pittsburgh, Pa. — Meriden St., Ward 35, 3 dwells.

\$8,000; own., J. McCarty; bld., Martsoff Bros.

Darragh St., Ward 14, brick dwell.; \$7,000; own.,
G. K. Stevenson; bld., J. R. Graham.

Frankslown Acc., No. 17, four st'y brick dwell.;

\$12,000; own., Mrs. T. Krebs; arch., J. F. Steen;
bld., William & McClintock.

Carson St., No. 1117, four-st'y brick dwell.; own.,
J. Locke; arch., W. A. Thomas; bld., Benz Bros.

Providence. R. I. — Olney St., w. s. two.and.one.

A. J. Locke; arch., W. A. Thomas; bld., Benz Bros. Providence, R. I.—Olney St., w s., two-and-one-half-st'y brick dwell.; own., Elbert E. White: arch., Martin & Hall; bld., Wm. Gilbane & Bro., and Thos. B. Ross & Son.
Taylor St., two-and-one-half-st'y frame dwell; own., George T. Kilner; arch., Stone, Carpenter & Willson; day-work.

Olive St., cor. Brown St., two-and-one-half-st'y frame dwell.; own., M. O. Weeden; arch., F. J. Sawtelle.

Sawtelle.

Central St., two-and-one-half-st'y frame dwell.;
\$4,000; own., James A. Potter; arch., George W. Cady & Co.; bld., George O. French & Co.

Euclid Ave., two and one-half-st'y frame dwell.;
own., Mrs. M. C. Dart; arch., Gould, Angell &

Swit.

Hanover St., two-and-one-half-st'y frame dwell.;
\$4,500; own., Mrs. M. A. Handy; bld., D. T. Handy.

\$4,500; own., Mrs. M. A. Handy; bld., D. T. Handy.
iomerville, Mass. — Broadway, frame dwell.; own.,
John Pitts; bld., Joseph H. Rich.
Kentcood St., frame dwell.; own., Mrs. Mary O.
Holt; bld., J. B. Phinney.
Highland Ave., frame dwell.; own., Agnes O. Pool;
bld., J. G. Poingdester.
Moreland St., 7 frame dwells.; own., J. W. Wilson;
bld. E. Burke.
Broadway, 2 frame dwells.; own., Nile Bros.; bld.,
Waugh Bros.
Raymond Ave., frame dwell

Waugh Bros.

Raymond Ave., frame dwell.; own., Geo. H. Herrick; bld., Quimby & Roberts.

(Houses Continued.)

Highland Ave., frame dwell.; own., John Adcock; bld., J. G. Poingdester.

Fanning Ave., 2 frame dwells.; own., E. B. Morgan; bld., W. L. Waugh.

Springfield, Mass.—Three-st'y dwell., 33' x 50'; \$15,000; own., Dr. S. N. Birnie; arch., Kellogg & Anable, 44 Broadway, New York.

Springfield, O.—Fountain Ave., framedwell.; \$7,000; own., Chas. Heiser; arch, C. Creiger; bid., Robert

own., Chas. resect, active Ellott.

N. Yellow Springs, frame dwell; \$7,000; own.
Wm. Thacker; arch., C. Creiger; bld., Robert

South Bethlehem, Pa.—Cherokee St., 7 two-and-one-half-st'y brick dwells.; arch., A. W. Leh, 214 one-half-st'y Second St.

St. Louis, Mo. — Two-st'y dwell., 50' x 67'. Maryland St., bet. Boyle and Newstead Sts.; \$9,000; own., B.

Praetz.

Dwell.; \$6,000; own., T. Massa.

Dwell.; \$3,000; own., P. Weish.

Dwell.; \$4,000; own., J. Marshall.

Three two-st'y dwells.; \$13,500; own., Thos. Flan-

Three two-st'y dwells; \$13,500; own., Theory.

Dwell; \$4,000, own., A. Krause.

Dwell; \$4,000; M. Matheison.

Dwell; \$4,800; own., J. Hoods.

Dwell; \$5,500; own., P. Hauptmann.

Dwell; \$3,500; own., G. Kring.

Dwell; \$3,500; own., H. Tremlett.

Dwell; \$4,500; own., H. Tremlett.

Dwell; \$4,500; own., R. Quarkeo.

Two dwells; \$7,000; own., J. Hannibal.

Dwell; \$4 000; own., M. Kanavaugh.

Six dwells; \$1000; own., L. Biszant.

Two dwells; \$1,000; own., F. Kickbalg.

Four dwells; \$4,000; own., E. Luccking.

Dwell; \$3,000; own., Fruin Building Co.

Stouchsburg. Pa. — Two-st'y brick dwell.

Stouchsburg. Pa. - Two-st'y brick dwell.; \$7,40; own., Riley Zerle; arch., Wm. A. Fink.

St. Louis, Mo. - Dwell., Castleman and Lawrene Sts.; \$3,500; own., A. C. Kilcullen; bld., Huker's Bros.

St. Louis, Mo. — Dwell., Castleman and Lawrenee Sts.; \$3,600; own., A. C. Kilcullen; bld., Hulker & Bros.

Dwell., Rutger and Compton Sts.; \$2,600; own. Mrs. A. Weatherby: bld., O. R. Rausehenbach.

Dwell., Julian and Goodfellow Sts.; \$3,500; own. Catherine Terry: bld., Gilsnider.

Dwell., Euclid and Delmar Sts.; \$3,500; own. and bld., State Savings Co.

Dwell., Flad and Spring Aves.; \$4,000; own. and bld., M. A. Morgan.

Dwell., Shenandoah and California Sts.; \$3,000; H. H. Jacoby; bld., T. H. Remmers.

Dwell., Page and Whittier Sts.; \$4,000; own. and bld., D. Nicolson.

Dwell., Hammell and Marcus Sts.; \$3,000; own., G. W. Trumble; bld., G. Handley.

Dwell., Etzel and Hamilton Sts.; \$4,507; own., H. Wood; bld., N. Pelligreen.

Dwell., Wafie and Union Sts.; \$7,000; own., Mary A. Denton: bld., Cunliff Bros.

Brick and stone dwell., St. Louis and Marcus Sts.; \$4,500; own., M. A. Crow; bld., W. H. Banker.

Five dwells., Vernon and Areade Sts.; \$20,000; own. and bld., Cunliff Bros.

St. Paul, Minn. — Portland Ape., s s, bet. Mackubin and Kent Sts., two-st'y frame dwell.; \$9,500; own. Philip C. Justus.

Marshall Ave. and Kent St., frame dwell.; \$15.00; own., J. G. Steln; arch., Buechner & Jacobson; bld., F. J. Romer.

bld., F. J. komer.

Tarriffville. Conn.—Two-and-one-half-st'y red sandstone dwell., 40' x 75'; \$20,000; own., Mrs. J. C. Mitchelson; arch., Hapgood & Hapgood, Hartford.

Washington, D. C.—S St., bet. 17th and ish Su., three-st'y brick dwell., 35' x 61'; own., George E. Hamilton, Trustee; arch., Leon E. Desser; con. Richardson & Burgess.

Liroy Pl. and Connecticut Ave., three-st'y stone and brick dwell.; own., Mrs. Spofford; arch., T. F. Schneider.

Wayyata Minn.—Dwell.: \$45,000; own., F. E.

Wayzata, Minn. — Dwell.; \$45,000; own., F. H. Peaney; arch. W. C. Whitney, Minneapolis; ou

Peaney; arch C. F. Haglin.

C. F. Haglin.

Worcester, Mass. — Almont Ave., three-st'y frame dwell.; own., P. Carey; con., J. A. McDermott. Grafton St., three-st'y frame dwell.; own., J. P. Fay; con., J. A. McDermott. Grand St., two-st'y frame dwell.; own., Mrs. S. J. Fitts; arch., W. E. Bell; con., F. J. Goff. Alvarado Ace., one-and-one-half-st'y frame dwell.; own., G. A. Fuller; con., Ward & Blanding. Gilman St., two-and-one-half-st'y frame dwell.; own., Mrs. Mary E. Murphy; day-work. Berkman St., two-sud-one-half-st'y frame dwell.; own., N. W. Ordway; con., W. B. Richardson. Everard St., three-st'y frame dwell.; own., Erc. H. Nordgren, con., L. M. Petterson. Levis St., three-sty frame dwell.; own., J. Dowl: con., F. J. Yates. Burncoal St., two-st'y frame dwell., own., F. E. Davis; con., W. E. Putnam.

Yonkers, N. Y.—Two-and-a-half-st'y stone and dwell., shingle roof: about \$7.000; arch., D Coates, 910 Drexel Building, Philadelphia, Pa. MERCANTILE BUILDINGS.

Pittsburgh, Pa.— Pean Ave. and Cecil Alley, business block; \$8,800; own., J. Horne & Co.; W. S. Fraser; bld., Cochrane & Davis.

OFFICE-BUILDINGS.

Waterbury, Conn. — South Mais St., opp. Scorille St., four-sty gray brick, stone and terra-cotts structure for store, offices and tenements, flat roof. 46' x 115'; own., Conlon Bros.; arch., Joseph A. Jackson.

PUBLIC-BUILDINGS.

Davison, Mich. — Three-st'y brick town-hall; \$7,000 arch., Harry J. Rill, Detroit, Mich.

Parkersburg, W. Va.—Crapsey & Brown, of Cicinnati, will be the architects of the new city-hall; brick and stone; \$50,000.

STABLES.

Baltimore, Md. — Two-st'y brick stable, 14' x 31'.
rear 767 Columbia Ave.; own.. Jno. J. Braus.

rear 767 Columbia Ave.; own.. Jno. J. Braun.

Brooklyn, N. Y. — Dean St., as, 305' 3' e 6th Ave.,
three-st'y brick stable, tin roof, 43' 5'' x 48' 6",
\$1,000; own., J. F. Carey, 543 Dean St.; arch., F. J.
Conlon. 163 Garfield Pl.
Hamburg Ave., e a, 50' s De Kalb Ave., two-st';
brick stable and prison for station-house, tin roof.
25' x 68'; \$15,000; own., City of Brooklyn; arch., W.
B. Tubby, 81 Fulton St., New York City.

Chicago. III.—Arthur Divan threast's brick stable.

Chicago, Ill.—Arthur Dixon, three-st'y brick stable 305 Fifth Ave.; \$4,500.



(Stables Continued)

Germantown, Pa.—S. Martin's Lane and Willow Grove Ave., one st'y stone stable, 28' x 43'; con., William J. Gruhler, 46 Herman St.; own., H. H. Houston; arch., Mantel Fielding, Jr., 110 South 4th St., Philadelphia.

Mt. Airy, Pa. — Levering St., 8 s. 340' w Germantown Ave., two-st'y stone stable, 20' x 30'; own., James Renker, Levering St.

Renker, Levering St.

New York, N. Y.—East Forty-first St., No. 41, three-st'y brick stable, 25' x 91', 36' high, flat tin roof; \$18,000; own., R. G. Dun, 26! Madison Ave.; arch., Berg & Clark, 10 West 33d St.

Philadelphia, Pa.—Cambridge St., No. 4727, onest'y frame stable; own., R. Ritziory.

North Twenty-ninth St., No. 2308, two-st'y brick stable; con., Fred Stock, 2306 North 29th St.

Fountain St., s e s, near Pechin St., two-st'y brick stable; own., Amos R. Matter.

Elliott St., n e oor. Green St., one-st'y brick stable and carriage-house; own., Thomas Moore, on premises.

Scoenth St., w s. 239' s Indiana Ava. ***vo.***

ises.

Seventh St., w s, 233' s Indiana Ave., two-st'y stone and brick stable; bld. and own., Woelfel & Schmunk, 602-4 Cambria St.

Wak field St., n e s, s e Ashmead St., two-st'y brick stable; con., A. J. Bunner, 115 Wister St.

North Fifth St., No. 1207, two-st'y brick wagonhouse and stable; con., John F. Greene, 917 North 7th St.; own., Wm Exby.

North Sixtieth St., No. 215, two-st'y brick stable; own., Emma Louise Bilthe.

St. Louis, Mo. - Stable, 3740 Morgan St.: \$10,000; own., H. H. Pierce; bld., Kennedy & Mathias.

Forcester, Mass. — Millbury St., one-and-one-half-st'y frame stable; own., J. P. Fay; con., J. A. Mo-Dermott.

STORES.

Andalusia, Ps.—Grant St. and State Road, two-and-a-half-st'y stone and frame store, 40' x 58', with back building, 12' x 24'; own., Torresdale Improve-ment Co.; con., G. Dallas Wagner.

Pa. — Store and dwell. will be erected for ers; arch., T. H. Scott, 531 Wood St., Pitts-

R. M. Baers; arch., T. H. Scott, 531 Wood St., Pittsburgh, Pa.

Brooklyn, N. Y. — Navy Nl., se cor. Bolivar St., fourst'y brick store and dwell., 19' 4" x 64', tin roofs; 512,000; own., J. Goldenberg, Osborne St. and Livonia Ave.; arch., Wm. Danniar, 44 Court St.

Nevins Nt., s w cor. Douglass St., two-st'y brick store, office and dwell., 52' x 19', gravel roof; \$3,500; own., Kelsey & Loughlin, 27 Atlantic Ave.; arch., J. O. Cummings, 412 West 19th St.. New York City; bld., F. E. Halstead, 360 Tompkins Ave.

Grand Nt., n s, 165' 5' w Driggs Ave., three-st'y brick store, 25' 1" x 99' 8", tin roof; \$10,500; own., E. McGarvey, 193 Grand St.; arch, Th. Engelhardt, 906 Broadway.

Fourth Ave., s s, 40' w President St., four-st'y brick store and dwell., 20' x 48', tin roof; \$4,200; own., Gilardo Porzio, 246 Fourth Ave.; arch., P. B. Marryott, 147 Fifth Ave.

Franklin Ave., e s, 75' n Fulkon St., 2 one-st'y brick stores, 14' x 41', composition fireproof roofs; \$2,000 each: own., John Schrimpf, Jr., 910 President St.; arch., Kafka & Mott, 137 Broadway, New York City.

Lik Kalb Ave., n s. 21'3" e Classon Ave., 5 four-st'y

briot stores, 14 x 41, composition mepion solves.

\$2,000 each; own., John Schrimpf, Jr., 910 President St.; arch., Kafka & Mott, 137 Broadway, New York City.

De Kalb Ave., n s, 21'3"e Classon Ave., 5 four-st'y brick stores and dwells., 27' x 6y, cement and gravel roofs; \$6,000 each; own., Daniel Buckley, Stirling Pl.; arch., W. M. Coots, 189 Montague St.

De Kalb Ave., n w cor. Graham St., one four-st'y brick stores and dwells., 29' x 80', cement and gravel roofs; \$6,000 each; own., Daniel Buckley, Stirling Pl.; arch., W. M. Coots, 189 Montague St.

Flathush Ave., e s, 100' n Vernon Ave., 3 three-st'y frame stores and dwells., tin roofs, 20' 6'' x 50'; \$3,800 each; own., Gustave H. Jahn, on premises; arch., Paul F. Eisenach, 59 Court St.; bld., John Dieghan, 142 Vernon Ave.

Third Ave., e s, 8y's 47th St., four-st'y brick store and dwell., tin roof, 30' x 55'; \$10,000; own., James Burke, 47th St. near 3d Ave.; arch., H. L. Spicer, 11"6 Third Ave., e s, 80's 53d St., four-st'y brick store and dwell., tin roof, 20' x 50'; \$5,500; own., Adam

(Stores Continued.)

(Stores Continued.)

Welse, 1106 Third Ave.; arch., H. L. Spicer, 1106
Third Ave.

Forty-sixth St., se cor. 4th Ave., 5 three.st'y brick
stores and dwells., tin roofs, 20' x 58'; \$3,500 each:
own., James G. Carroll, 4th Ave., bet. 46th and 47th
Sts.; arch., H. L. Spicer, 1106 Third Ave.
Hamburg Ave., n w cor. Moffatt St., three-st'y
frame store and flat, tin roof, 25' x 57'; \$6,500; own.,
arch. and bld., Francis Jezek, 1116 Myrtle Ave.
Norman Ave., s e cor. D amond St., three-st'y
frame store and dwell., tar, felt and gravel roof, 25'
x 55'; \$7,500; own., James Scott, 67 Jewel St.; arch.,
Benj. E. Lowe, 197 Calyer St.
Fulton St., se cor. Nostrand Ave., one-st'y brick
store, 90' x 100', gravel roof; \$10,000; own., C. W.
Betts, 1792 Fulton St.; arch., E. S. Betts.
Franklin St., n e cor. Eagle St., four-st'y brick
store and dwell., 24' 10" x 60', gravel roof; \$9,000;
own., Mrs. Anna Rooney, 23! Franklin St.
Johnson Ave., s s, 50' w Bogart St., three-st'y
frame store and dwell., tin roof, 25' x 70'; \$5,000;
own., S. & H. Plant, 358 Johnson Ave.; arch., Th.
Engelhardt, 905 Broadway.

Sands St., Nos. 61-63, five-st'y brick store and
dwell, tin roof, 27' 6" x 90'; \$1,200; own.. Herman
Scheumann, 43 West 83d St., New York City; arch.,
J. G. Glover, 186 Remsen St.
Willoughby Ave., n w cor. Marcy Ave., four-st'y
brick store and dwell., tin roof, 27' 84' x 72'; \$1,200;
own. and bld., Henry Roth, 782 Broadway; arch.,
Henry Vollweller, 483 Hart St.
Flushing Ave., s, 225' e Delmonico Pl., four-st'y
brick store and dwell., tin roof, 25' x 65'; \$8,000;
own., G. A. Gardner, McKibben and Ewen Sts.;
arch., Hugo Smith, 10 Moore St.
Halsey St., No. 523, three-st'y brick store and
dwell, gravel roof, 17' x 50'; \$4,000; own. and arch.,
Walter F. Clayton, 305 Suyvesant Ave.,
South St., bries and Relate Ackenver.

water F. Clayton, 300 Stuyvesant Ave.

Buffalo, N. Y.— Chenango St., s w oor. Massachusetts St., three-st'y brick store and flats; \$40,000; own., Elizabeth Koelsch; arch., Eckel & Ackerman; bld., Nicholas Kemp, Jr.

Exchange St., No. 35-37, three-st'y brick store and office; \$10,000; own., John C. Grezinger; arch., M. E. Beele & Son.

Exchange St., No. 35-37, three-st'y brick store and office; \$10,000; own., John C. Grezinger; arch., M. E. Beebe & Son.
Chleago, Ill. — Mr. Medenwald, three-st'y brick store and fiata, 190 Colorado Ave.; \$4,500.
Carl Nitz, three-st'y brick store and fiats, 1986 North Ashland Ave.; \$6,000.
Herman Fix, two-st'y frame store and fiats, 409 Fullerton Ave.; \$5,500.
John Boland, three-st'y brick store and fiats, 695 West 22d St.; \$6,500.
P. Snyder, three-st'y brick store and fiats, 693 Halted St.; \$4,300.
John Sheehy, two-st'y brick store and fiats, 6603 Halted St.; \$4,300.
Mrs. Mathilda Larson, 2 three-st'y brick stores and fiats, 5290-5292 Halsted St.; \$10,000.
Charles Schroeder, three-st'y brick store and fiats, 737 Clybourn Ave.; \$5,000.
E. Bergman, 3 one-st'y brick stores, 79\delta I Wenty-second St.; \$3,000.
A. A. Calland, two-st'y brick store and dwell., 163-169 Willow St.; \$3,000.
F. A. Calland, two-st'y frame store and fiats, 1614 West North Ave.; \$5,000.
Frank Dloughy, three-st'y brick store and fiats, 664 Centre St.; \$11,600.
F. Thomas, three-st'y brick store and fiats, 667 Lincoln Ave.; \$5,000.
G. F. Dostal, two-st'y brick store and fiats, 250 State St.; \$3,300.
John C. Kiasa, four-st'y brick store and fiats, 250 State St.; \$3,800.
John C. Kiasa, four-st'y brick store and fiats, 158-160 Newberry Ave.; \$11,000.
Thomas Moran, three-st'y brick store and fiats, 158-160 Newberry Ave.; \$11,000.
Thomas Moran, three-st'y brick store and fiats, 158-17-519 Thirty-ninth St.; \$10,000.
Mrs. Clara Svestna, four-st'y brick store and fiats, 968 Ogden Ave.; \$10,000.
Mrs. Mary B. Lanyinelto, two-st'y brick store and fiats, 968 Ogden Ave.; \$10,000.
Mrs. Mary B. Lanyinelto, two-st'y brick store and

(Stores Continued.)

(Stores Continued.)

flats, 1400 West Indiana St.; \$4,000.
John Neban, two-st'y brick store and flats, 933

Kimbark Ave.; \$4,500.

E. E. Sharber, three-st'y brick store and flats, 361

Kedzie Ave.; \$4,500.

A. J. Toolen, 5 one-st'y brick stores, 126-131

Seventy-fifth St.; \$10,000.

Peter Tres, 2 two-st'y brick stores and flats, 4843

Chicago Ave; \$4,300.

George Koppas, three-st'y brick store and flats, 2047 North Clark St.; \$3,000.

A. Stierkowsky, three-st'y brick store and flats, 1046 Wrightwood Ave.; \$7,000.

James Van Bezey, 2 four-st'y brick store and flats, 212-214 Blue Island Ave.; \$16,000.

Lystad & Anderson, 2 four-st'y brick store and flats, 296-298 Division St.; \$20,000.

W. Chalewinski, two-st'y brick store and flats, 3357 Mospratt St.; \$5,000.

Dubuque, Ia. — Seven-st'y store and office-building;

Dubuque, Ia. — Seven-st'y store and office-building; \$2:0,000; own., Dubuque Bank; arch., W. W. Boyington & Co., Chicago, Iil.

Erie, Pa. — Three-st'y brick store will be built for Kneir & Sons, at a cost of about \$12,000; arch., Joseph Frank.

Fitchburg, Mass. — Main St., Nos. 223-31, brick and stone store, banking-room and office; about \$100,000; own. Safety Fund National Bank; arch., Henry M. Francis; bld., Edgar S. Moulton.

New York, N. Y. — Elm St., n w cor. Franklin St., seven-st'y brick store building, 25' x \$0', 84' high, flat concrete roof; \$60,000; own. Herman F. Obrens, 40 Franklin St.; arch., Geo. H. Griebel, 247 West 1951, 84.

Seventy-first St., n s, 198' e Avenue A., three-st'y brick store building, 25' x 80', 40' high, fist asphalt roof; \$12,50; own. and arch., Gottfried Knoehe, 501 East 71st St.

Paterson, N. J. — Three-st'y stone and brick store and office-building; own., Katz Bros.

and omce-building; own., Ratz Bros.

Philadelphia, Pa. — Columbia St., No. 807, threest'y brick store and dwell.; con., Arch St. Building
Co., 619 Arch St.; own., Issac Rosskan,
North Front St., Nos. 2430-32, 2 three-st'y brick
stores and dwells.; own., John Hagan, 2455 Howard

St.

Lancaster Are., Nos. 4616-18, 2 three-st'y brick stores and dwells. with back buildings; own., Thomas Donnelly, 4614 Lancaster Ave.

Morgan St., n w cor. 9th St., four-st'y store, 20' x 87', and four-st'y store and dwell., 20' x 40', with back building, 14' x 47'; own., T. Mullin, 1515 Bancroft St.

Pittsburgh, Pa. — Penn and Ellsworth Sts., brick store; \$11,500; own., H. D. Wallace; arch., G. S. Orth & Bro.; bld., W. B. Bennett.

St. Louis. Mo. — Store and dwell.; \$4,600; own., Barkley & Dubail.

TENEMENT-HOUSES.

New Haven, Conn. — State St., opp. Blatchley Ave., three-st'y brick structure for store and 5 tenements, flat roof, 43 x 54; \$8,000; own., Abraham McGinty; bld., John Lowe & J. H. Swan.

bld., John Lowe & J. H. Swan.

New York, N. Y. — One Hundred and Sixty fifth St.,
n. s. 200' e Brook Ave., four-st'y brick tenement, 2w'
x 60', 50' high, flat tin roof; \$13,000; own., Geo. E.
R. W. Carr, 683 East 165th St.; arch., M. J. Garvin,
330 Third Ave.,
Columbia Ave., s s, 75' w Jefferson Ave., three-st'y
brick tenement. 20' x 45', 35' high, flat tin roof;
\$11,000: own., Betty Middletown, 128 West 56th St.;
arch., Thomas Graham, 1236 Madison Ave.
Suburban St., n e cor. Valentine Ave., three-st'y
brick and frame tenement, 25' x 59', 33' high, peak
shingle roof; \$4,000; own., M. A. Keith, 105 Franklin St.; arch., G. H. Budlong, White Plains.

THEATRES.

THEATRES.

New York, N. V. — Fifty-eighth St., 95' w 3d Ave., five-st'y brick theatre, 125' x 100', 84' high, flat terracotta and asphalt roof; \$334,000; own, Francis J. Schnugg, 179 East 96th St.; arch., J. B. McElpatrick & Son 140' Broadway Schnugg, 179 East 961n & Son, 1402 Broadway.

WAREHOUSES.

Baltimore, Md. - Four-st'y brick warehouse, w s

LOCALITY OF AUTHORSHIP OF DESIGNS PUBLISHED IN THE AMERICAN ARCHITECT.

The assertion that the American Architect is a paper whose characteristics are national and not merely local is supported by the following table, which exhibits the manner in which several journals have treated domestic architecture In this comparison the IMPERIAL edition of the American Architect is considered, since the additional plates of the INTER-NATIONAL edition are, in the main, illustrations of foreign work.

Paper.	Number of subjects contributed.	Number of contrib- uting architects.	Towns in which contributors were established.	States in which con- tributors were estab- lished.	
No I No II	214	109	28	16 15 11	
No. II	137	78	28 21 16	15	
No. III	214 137 118	109 78 56	16	11	
Am. Architect.	267	152	47	24	

In the first column, "subjects," only actual domestic work is included (foreign work, imaginative designs and the work of sketch-clubs are excluded), and the figures there given indicate that this number of designs might have been prepared by the same number of architects practising in the same number of different towns. The remaining columns show how nearly this ideal distribution has been reached in

Subjects.	Per cent of total number of sub- jects.	Different architects contributing.	Per cent of total number contrib- uting architects.	Towns.
161	.752 .335	75	.688	7
46 70	.593	24 22	.392	1
73	.273	39	.256	3

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Architects practising in the State

From this table it appears that Massachusetts architects -. 256 per cent of the total number of contributorsprovided only .273 per cent of the total number of designs published, percentages which, in view of the fact that Massachusetts is one of the most populous States in the Union, prove that they have not been accorded an unreasonable mount of our limited space.

is the strongest and most serviceable Cement made, and will permit the admixture of a larger amount of sand or gravel with less loss of strength than any other brand; it is therefore the most economical. It is the finest ground cement made, and has the largest bulk to the barrel.

The following test, made in actual work, by Col. D. C. Houston, Corps of Engineers, U. S. A., at the sea wall around Governor's Island, New York Harbor, has never been equalled by any other cement. It is as follows: Tensile strength per square inch, one day, 384 pounds; seven days, 600 pounds; thirty days, 818 pounds.

For Sidewalks it gives the best color, and the most endurable wearing surface. Most of the prominent Railroad Bridges and the large Office Buildings of the country stand upon a foundation of concrete made of ALSEN'S CEMENT.

Alsen's Portland Cement Works, New York Office, 143 Liberty Street.

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BUILDING INTELLIGENCE.

(Warehouses Continued.)

Holliday St., n Pleasant St.; own., Geo. A. Frederick, 1118 St. Paul St.

Brooklyn, N. Y. — Furman St., ws, 440'n Atlantic Ave., five-st'y brick warehouse, 55' x 311', felt, tar and gravel roof; \$20,000; own., Franklin Woodruff, Jr., Produce Exchange, New York City; arch., Libby & Keese, 519 Flushing Ave.

Cincinnati, O. — Seventh St., n w cor. Broadway, six-st'y brick warehouse; \$16,000; own., Wm. Miller; arch., S. Hannaford & Sons; bld., Jas. Griffiths & Sons Co.

Holmesburg, Pa. - Mill St., w Torresdale one-st'y frame storehouse; own., George J.

Sons.

New York, N. Y. – Fourth Ave., No. 79, seven-sty brick warehouse, 24' x 96', 89' high, flat tin roof; \$35,000; own., Amund Johnson, 1635 Fox St.; arch., Lonis Korn, 621 Broadway.

West Houston St., No. 69, seven-sty brick warehouse, 25' x 95', 75' high, flat tin roof; \$46,000; own. and arch., Edward Judson, 22 West 99th St.

Philadelphia, Pa. – Gray's Ferry Road, No. 3513, three-sty brick storage and manufactory building, 36' x 60'; own., Harrison Bros. & Co.

t. Louis, Mo. — Two-st'y warehouse, bet. Pine and Chestnut Sts., \$10,000; own., R. Greer. MISCELLANEOUS.

Anburn. III. — Masonic Temple; \$32,000; own., Masonic Lodge; arch., Sam N. Crowen.

Baltimore, Md. — One-st'y brick, stone and iron car-barn, 75' x 379', n e cor. Pennsylvania and North Aves.; own., Baltimore City Passenger Railway Co., 201 East Baltimore St.

Brooklyn, N. Y.—Pier 3, Martin's Stores, one-st'y frame shed, gravel roof, 64' x 350'; \$6,800; own., John I. Martin, 28 Pierrepont St.; arch., John H. Euler, 1819 Prospect Ave., New York City.

Humburg Ane., s e cor. De Kalb Ave., three-st'y brick police-station, tin roof, 50' x 82'; \$45,000: own. City of Brooklyn; arch., Wm. B. Tubby, 81 Fulton St., New York City.

Buffalo, N. Y.—Elk St., n s, junc. Eric Railway, brick storage-house; \$10,000; own., Frank A. Dole; arch., W. F. Felton.

Camden, N. J. – Fifth St., ws. above Arch St., two-sty fire-ladder house, 23' x 83'; own., City of Cam-den; con., William Severns, 462 Berkley St.

Galveston, Tex.— Center St., bet. M and Mi Sts., Protestant and Israelite Orphan's Home; \$30,000; J. Lorenberg, Church Building Committee; arch., Alf. Muller; con., J. Lucas & Son.

Muller; con., J. Lucas & Son.

Germantown, Pa.— Wayne St., ws. s School I.ane, one-st'y glass and stone conservatory; con., William J. Gruhler, 48 Herman St.; own., Geo. Flance. Wister St., ns. e Main St., on-st'y brick barbershop; con., John P. Neil, 5 West Coulter St.

Medford, Mass.— Three-st'y brick alteration to pumping-station, French roof, 21' x 40'; \$4,000; own., City of Boston; arch., City.

Nawnort R. J.— Club house for Country Club.

Newport, R. I.—Club-house for Country Club; \$30,000; con., Philip Dowling.

3-30,000; con., Finip Downing.
New York, N. Y. — Third Ave., e s, bet., 153d and 155th Sts., two-st'y brick dancing-hall, 54' x 51', 32' high, peaked tin roof; \$7,000; own., George Keller, Main St., "West Farms"; arch., Henry Piering, 693 East 145th St.

Philadelphia, Pa. — Germantown Ave., New Market and Canal Sis., one-sty brick building, 70' x 116' for the Charles Scott Spring Company; con., Wm. Steele & Son, 566 Wainut St.

Longshore Si., bet. Tulip and Hegerman Sts., one-sty brick and stone laundry, 20' x 20'; con., Jas. G. Mechan, 3225 Delaware Ave., Holmesburg.

Brooks, Shoobridge & Co.

7 BOWLING GREEN.

ENGLISH PORTLAND CEMENT.

THE "GORTON" BOILER,

For STEAM and HOT-WATER HEATING.

ECONOMICAL IN FUEL, AUTOMATIC, SELF-FEEDING.

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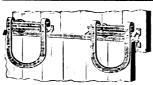
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LANE'S Patent Steel Barn Door Hanger. ANTI-FRICTION. MOST COMPLETE IN CONSTRUCTION.

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LANE'S Patent Noiseless Steel Parlor Door Hanger.

Hanger is made of steel throughout, including wheel, except solid interior leather tread, causing to roll noiselessly. Single steel track instead of double wood rail.

Ask your Hardware dealer, and send for Circular.

Manufactured by LANE BROTHERS, Poughkeepsie, N. Y.

BUILDING INTELLIGENCE.

(Miscellaneous Continued.)

Lehigh Ave. and Fillmore St., one-st'y brick and iron boiler-house, 60' x 62', and stack 165' high for mills of John Bromley & Son: estimated, \$8,000; con., George W. Stewart, 2526 North 6th St.; arch., Walter H. Geissinger, s w cor. Chestnut and 12th Sts.

watter H. Geissinger, s w cor. Chestnut and 12th.

Pennsylvania Ave. and Twenty-fourth St., one-st'y
engine-house and smith-shop, 20' x 50'; con., Ryan
& Kelley, 8 South Broad St.

Biddle and Twenty-fourth Sts., engine-house; con.,
Ryan & Kelley, 8 South Broad St.

Diamond St., n w cor. Woodstock St., three st'y
brick and stone parsonage, 23' x 60', for the Union
Methodist Episcopal Church and two-st'y stone and
brick Sunday-school, 32' x 48'; about \$15,000; con.,
John R. Wiggins, 1111 Arch St.

South Sixteenth St., No. 2030, one-st'y brick oyster
saloon; own., W. Stewart, South 16th St.

Germantown Ave., (rear) No. 2351, one-st'y brick,
wood, glass and galvanized iron building for repairing shoes; own., John Braun, 2851 Germantown
Ave.

Lehigh Ave., w Frankford Ave., frame lumber storage shed; own., George W. Knoll, 2620 Coral St.

BUILDING INTELLIGENCE.

(Miscellaneous Continued.)

Busileton Pike, near Township Line, one-ty frame carriage-house; own., Martin Killhour.

Diamend St., No. 2922, one sty brick shop; own.

D. M. Gardner, 2926 Diamond St.

Canal St., Nos. 1119-21, two-sty brick carriage-shed, 32' x 60'; con., Theo. Dursch, 1112 North M St.

Reading, Pa. — Suburbs of Reading, three-st'y brick House of Good Shepherd; \$120,000; own., Rev. Father George Borneman; bld., L. Ficht.

Tree Brewery.

Tramway for stone-yard; \$3,000; own., Pickel Stone Co.

Worcester, Mass. — Winona St., one-st'y brick blacksmith-shop; own., Spiers Mfg. Co.; con., Ward & Blanding.

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ADVERTISERS' TRADE SUPPLEMENT.

No. 149.

SATURDAY, NOVEMBER 3, 1894.

VOLUME XLVI.

EAGLE" CRYSTAL SHEET-GLASS FOR FINE DWELLINGS.

EXPLANATORY POINTS OF INTEREST CHAMBERS GLASS COMPANY.



WE take pleasure in calling the attention of your readers to the advertisement of the Chambers Glass Company, which appears on page ix. Their plant, located at New Kensington, Pa., within a few miles of Pittsburgh, is the finest, most modern and complete window-glass works in existence to-day. continuous melting-tank furnaces are the clargest in the world, and comprise many novel features the sole property of this Company, which enables them to produce the superior quality of glass for which they are

Mr. Jas. A. Chambers, President of this -Company, was the first to introduce the continuous melting-tank system in this country. He was President of, planned, built and operated the Chambers & McKee plant at Jeannette, with the following staff of assistants: Mr. George E. Moore, General Superintendent, Mr. H. B. Patton, Secretary, and Mr. H. A. Newkirk, Sales Agent. The successful inauguration and operation of the tank system in this country is due to the ability, experience, knowledge and energy of these gentlemen.

About two years and a half since, these same gentlemen, with a number of others organized the Chambers Glass Company, with the following officers: President, Jas. A. Chambers; Vice-President, Max Drey; Treasurer, W. G. McCandless; Secretary, H. B. Patton; Superintendent, George E. Moore; Sales Agent, H. A. Newkirk. Among the stockholders and directors are some of the largest and most prominent glass jobbers in the United States, including Bendit, Drey & Co., New York, Geo. F. Kimball, Chicago, Wm. Reid, Detroit, and Drey & Kahn, St. Louis. This Company are the sole manufacturers of "Chambers Eagle Brand," which enjoys the distinction of being the best window-glass made.

Not satisfied with what they have already accomplished, they are continually striving to improve, and are now making what is known as "Chambers Eagle Brand" twenty-six- is a frequent expression used by those desirounce Crystal Sheet. This is an extra quality | ing to open a market for other makes.

of glass, and its manufacture has never been attempted by any other concern in this country, and cannot be produced outside of their works. While it is not equal to polished plate, it makes a very good substitute and costs much less.

In order that purchasers may be certain to get the genuine article and not be deceived by imitations, special trade and quality marks have been adopted for all the different grades and qualities they manufacture. These are fully explained in their price-list, which will be mailed on application without charge.

All the largest and best class of jobbers in the country handle this glass, and, in ordering, if you will specify "Chambers Eagle Brand" there can be no reasonable excuse for the substitution of other brands, and you can satisfy yourself on this point by comparing the printing on the boxes with the information contained in their price list. Make application for these lists or for any other information you may desire to the Chambers Glass Co., New Kensington, Pa., where the works and main offices are located, or to their branch offices, No. 1442 Monadnock Block, Chicago,

CHAMBERS GLASS CO., NEW KENSINGTON, PA.

GLOBE VENTILATOR.

THE Globe is generally recognized as the Standard Ventilator. "As good as the Globe" Gurley.

The Globe has been tried and tested amid all conditions and surroundings for many years, and its continued use by leading architects and builders is both an endorsement and demonstration of its practical merit and worth.

The manufacturers of this device put into its construction the best materials obtainable, and are never so proud as when pointing out ventilators that have seen service for periods of from fifteen to twenty years, on prominent buildings throughout the city where it is manufactured.

Figure 2 gives a side view of the Fifth Avenue Baptist Church of Troy, and shows the Globe Ventilators in position on the roof placed there in October, 1893. The membership of the church had called a new and talented pastor to serve them, large audiences came to hear him, and the officiary realizing that even his brilliancy could not hold the people, amid the discomfiture of such crowded conditions; and that the contributions of even one attendant who might otherwise remain away from the services, would more than pay the interest on the investment; resolved to ventilate the audience-room, and thus aid both speaker and hearer alike. How thoroughly the Globe Ventilator did its work and how quickly it removed the stuffy atmosphere and excessive heat, and how well the congregations have kept up, can be learned by a chat or correspondence with the Hon. Lewis E.

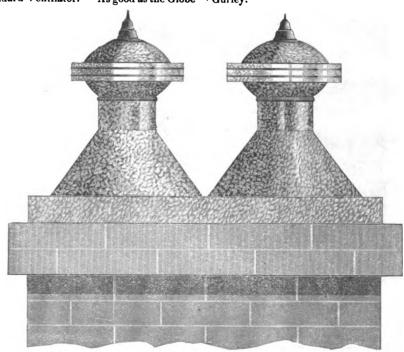


Fig. 1. Figure 3 in the illustration shows a I forty-eight-inch ventilator, and exhibits its shapely appearance. The wonder is that owners of large and expensive buildings, will fail to cure smoky chimneys is that they send allow them to be defaced, by ugly and ill made ventilators, when one so symmetrical and effective as the Globe, can be so readily and cheaply obtained.

Figure 1 shows the Globe in position on a chimney containing two troublesome

Another reason why tinsmiths sometimes a boy to do a man's work, so to speak. They put a four or five inch ventilator where a ten or twelve inch should be placed, and then are surprised and chagrined because success does not reward their efforts.

The Globe Ventilator was adopted by the turers, Philadelphia, are running eighteen

Globe Ventilator Co., will be pleased to send a model, or mail a catalogue to any who may wish them, and will express such desire.

GLOBE VENTILATOR CO., 203 RIVER STREET, TROY, N. Y.

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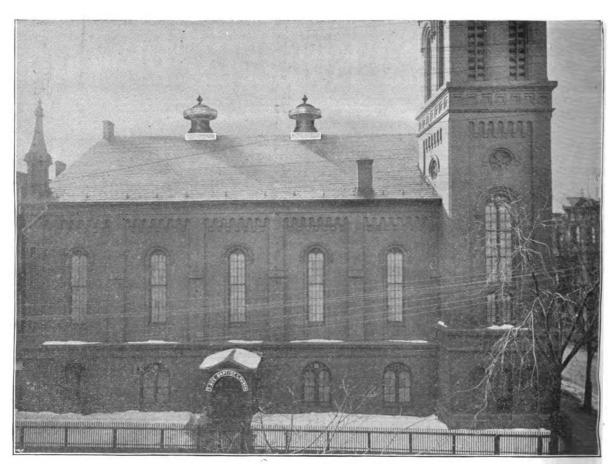


Fig. 2.



ous in its results, to attempt to cap two or three flues with one cowl, for nature's syphon immediately begins to get in its fine work, and the smoke and gases commence to rise in one flue, and draw down the other.

flues. It is a mistake, unpleasant if not seri- | managers of the Columbian Exposition, and | stacks. The demand for their plates was so was used with good results on the following great during the latter part of September buildings: Forrestry, Agriculture, Machinery that they were compelled to run up to Hall, Administration, Transportation, Horti- ten o'clock at night. They say they not culture, Choral Hall and Woman's Building. only propose to keep up the quality of their The manufacturers of this ventilator, the standard brands, but improve them in every



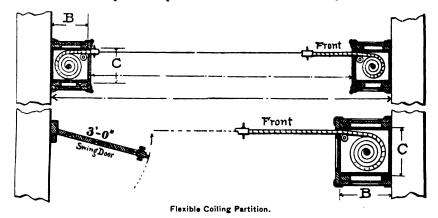
manner possible, and have now under way a plan for increasing the wearing qualities of the Genuine Taylor "Old Style" brand, which already carries every ounce of coating that can be put on. They further say that they can meet the competition of the cheap plates with heavy coating, by selling a better article at a less price, and this they have in plates which are carrying from forty to fifty pounds per box of 20" x 28".

FLEXIBLE STEEL-CLAD FIREPROOF MATERIALS.

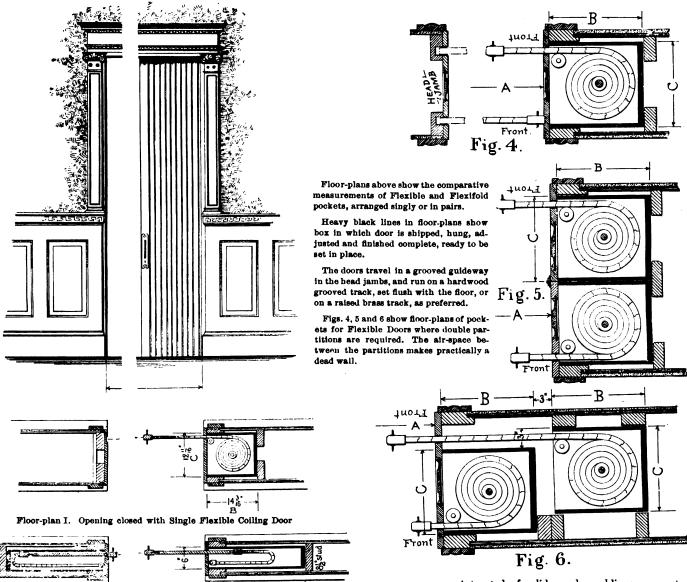
Our new adaptation of the flexible material Flexible Steel-clad Fireproof Doors, Partitions and Shutters, for fire wall-openings in stores, warehouses, factories, theatres, hotels, corridors, elevator, light and air shafts, engine, boiler and storage vaults and window-openings generally are constructed of prepared

hinges; each series of hinges forming a con- wholesale or retail mercantile stores, waretinuous metallic chain through the width of houses, hotels and all places where it is some, strong and easily operated. The me- decrease the insurance rate. tallic surfaces can be lacquered or painted to | Our Flexible Coiling Partitions are con-

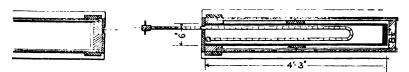
gether with concealed interlocking steel adapted for the sub-division of large areas in the partition-door. The Fire-Doors are hand- desirable to lessen the fire-risk and thus



Elevation and Floor-plans, showing various applications of Flexible Coiling and Flexifold Doors, for Business Blocks, Public Buildings, Etc. The Measurements of pockets, n above, are for an 8-foot opening. Other sizes in proportion.



Floor-plan II. Opening closed with Single Flexifold Door, all slatted, to look exactly like Flexible Door, Plan I.



Floor plan III. Opening closed with Pair of Flexifold Doors, made either half-panelled, to order, or plain, as preferred.

wood mouldings, with overlapping joints, each | match other wood-finish. They can be made strip covered with cold-rolled steel, by being in bright steel, nickel, brass, copper or drawn through special machinery, invented by ourselves for the purpose, using neither nails, screws nor solder, and all hinged to-large fire-doors or partitions are specially clubs, halls and all large assembly-rooms.

structed of solid wood mouldings, connected by a series of concealed interlocking steel hinges, which run through the entire width of the doors, making them very strong and durable, and are hung on steel rods, in boxes, ready for shipment. There are no overhead hangers, springs, weights or cords to get out of order. They economize valuable room; are handsome, durable, strong, and as soundproof as the ordinary door.

The arrangement of the pockets is extremely simple. Any good carpenter can set these

Ground-plan II, Figure 7, shows a 20-foot opening, closed with a 17-foot flexible door, in combination with a 3-foot swing-door. This arrangement has its advantages for certain places, and is proving a great convenience. We also make a door to run on a section of a circle, with any reasonable radius.

Send us the measurements of rough opening, between walls, stating if same is to be closed with a single or pair of doors, with kind of wood, and we will send you sizes of pockets required, with an estimate.

STEEL-CLAD WOODWORK.

An eminent Insurance Underwriter says: "The market is full of approved fireproof materials, yet it remains for an architect to design a building that shall be strictly fireproof, and not be too cumbersome or costly." The steel-clad mouldings and woodwork, as covered by our process, cannot ignite. If subjected to long-continued and intense heat, the wood will slowly carbonize, but cannot flame or be consumed, for the air is excluded.

The wood will not expand or contract through change in weather, because it is hermetically sealed against the action of the atmosphere, as well as against flames.

The steel-clad mouldings can be heated redhot for hours, and, while the wood will be carbonized, the metal shells will not melt or lose their shape. Many observers have doubtless noticed in the ruins of a fire, among the bricks and mortar, sheet-tin and iron ware, sheet-iron stoves and smoke-pipe that have successfully withstood the intense heat. The air-tight stove of the home or shop is heated red-hot repeatedly, for a generation or more, and otherwise abused, yet it is rarely burned through.

Repeated tests demonstrate that our steelclad woodwork will withstand the severest fire tests, and in case of a general conflagration it will be found in the ruins of the burned building carbonized, but unconsumed and intact.

Sub-divide large areas, and thus decrease your insurance rates. Our Flexible Steel-clad Doors are approved by Underwriters and Fire Inspectors as superior to the Standard Fire Door (a wood door covered with sheet tin or iron) in fire-resisting properties, and are inexpensive.

Our prices depend on kind of finish, size of opening, and if same is to be closed with a single or a pair of doors, or with double doors with an air-space between.

FLEXIBLE DOOR & SHUTTER COMPANY, 15 Union Street, Worcester, Mass.

"QUILT."

"QUILT" will make a house warmer in the winter and cooler in the summer than six layers of rosin building-paper or three of the best wool felt, and it is much easier to put on than back plaster, a much better insulator, and a good deal cheaper. Also "Quilt" stays



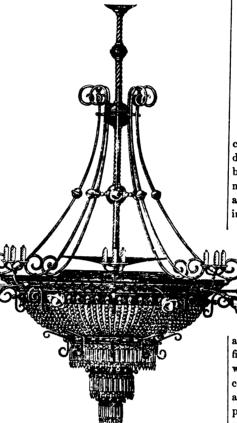
where it is put, and has that great advantage over either back plaster or mineral wool, both of which will break down and let the wind through. The filling of "Quilt" is a series of flat fibres, which cross each other at every angle and form an immense number of minute air-spaces, these being the main source of the great insulating power. These same air-spaces are fully as effective for deafening as for insulating and present an almost impassable barrier to sound transmission. "Quilt" has been very largely and effectively used as an insulator in refrigeration, etc. It is made by

SAMUEL CABOT,

Boston, Mass.

FRINK'S REFLECTORS.

ELECTRICITY has made rapid strides in many directions, but in none more than in electric-lighting of public buildings. Where it has been generally used in larger towns and



cities, one point, however, has been very noticeable; that the lamps have not been economically distributed in order to get anywhere near the maximum capacity of light from the current used. This matter, like all others from practical use, adjusts itself in time, and now that attention is directed to it, Frink's celebrated Reflectors have naturally come to the rescue, and have been utilized and found to be equally beneficial in diffusing the light from the electric-light, as they have been for many years in connection with oil and gas. He has designed many new reflectors for use with electric-lamps, as well as those for gas and electricity. We here present to our readers one of our latest designs for a combination reflector.

They are made in a great variety of designs, suitable to all styles of architecture, and at least double the lighting-capacity of the current used.

As stated before, their benefits are now being appreciated, as shown by their general introduction throughout the country, Mr. Frink having recently furnished reflectors for lighting the following:

First Presbyterian Church, Asbury Park, N. J. Moody's Auditorium, Northfield, Mass. St. Peter's Evangelical Church, Berlin, Ont. First Presbyterian Church, Pine Bluff, Ark. Saenger Hall, Newark, N. J. First Baptist Church, Jackson, O.

Congregational Church, Flushing, N. Y.
State Normal School, Oneonta, N. Y.
M. E. Church, Walton, N. Y.
Presbyterian Church, Paris, Ont.
Catholic Church of St. John the Baptist, Brooklyn N. Y.
Brooklyn M. E. Church, Jacksonville, Ill.
Catholic Church of Most Holy Redeemer, New York, N. Y.
Presbyterian Church, Clarksburg, W. Va.
U. B. Church, Shippensburg, Pa.
Simpson M. E. Church, Erie. Pa.
First Presbyterian Church, Nanaimo, B. C.
St. Francis Xavier R. C. Church, Little Falls,
Minn.
Opera-house, White Plains, N. Y.
St. Peter's German Lutheran Church, Plainfield,
N. J.
Salem Evangelical Church, Pottstown, Pa.
First Presbyterian Church, Lancaster, Pa.

N. J.
Salem Evangelical Church, Pottstown, Pa.
First Presbyterian Church, Lancaster, Pa.
Hasbrouck Institute, Jersey City, N. J.
M. E. Church, Ballston Spa, N. Y.
First Presbyterian Church, Vancouver, B. C.
First Universalist Church, Danbury, Conn.
Centenary M. E. Church, Lynchburg, Va.
St. John's Evangelical Lutheran Church, Lewistown, Pa.
Durand-Ruel Art Galleries, 389 Fifth Avenue,
New York, N. Y.

I. P. FRINK,

551 PEARL STREET, NEW YORK, N. Y.

PATENT CONTINUOUS STEEL CEILINGS.

OUR Patent Continuous Steel Plates for ceilings and side-walls are a triumph of artistic design in stamped steel. Plates lapping at beads which form part of general design do not show joints, and panels can be formed of any magnitude by use of our various moldings.

The advantages of not being governed by a few fixed sizes of panelled plates in constructing panels in ceiling work, will, we trust, be appreciated by all interested in interior decoration.

Our Patent Continuous Steel Ceilings are simple and practical in construction, light and elegant in appearance, capable of almost unlimited decoration, fireproof, can be washed with sponge and water, applicable over old wood or plastered ceilings, joints are not noticeable when plates are properly applied, and ceilings may be panelled without restriction as to size of plates, by use of mouldings, deep or otherwise.

ARE PERMANENT, FIREPROOF AND BEAU-TIFUL.

They can be decorated and re-decorated should a change in coloring be desired. They do not crack or fall like plaster, or dry out and shrink like wood. They do not hold disease germs or vermin, and can be cleaned with sponge and water. For all classes of buildings Steel Ceilings are desirable.

Plates are interchangeable. The variety of combinations of which the designs are capable are unlimited. No intricate plans to work out in stripping, no styling or filling used. These plates are specially adapted for sidewall finish and wainscoting.

We furnish estimates promptly, and, where necessary, send drawings. Special attention given to drawings of architects. In sending diagrams of rooms to be covered, please send exact measurements, state whether centres are desired or not, and give height of room; also what room is used for. This will enable us to meet your wants more satisfactorily. Customers may find it desirable to secure help from us on their first work, as a practical lesson may be of great advantage to them and their workmen. We can furnish competent men to apply and decorate our

plates, charging for time, board and travelling expenses.

> WHEELING CORRUGATING CO., WHERLING, W. VA., U. S. A.



ONE of the most important questions confronting the present-day architect is the sanitary perfection of the structure in contemplation.

Some years ago the plumbing was of minor importance, but with the steady advance of sanitary science plumbing has come to be the there must necessarily be an air space, which

expectations, and are now coming back to the only really sanitary closet possible; namely, the double-trap closet.

The washout and the syphon-jet closets are now the only ones seriously considered, and it is conceded that neither is perfect, but in the absence of something better they have been accepted and used.

Notwithstanding the most perfect system of ventilation, conditions will arise which cannot be anticipated, and which make the singletrap closet uncertain. A sudden increase of the pressure on the house side or a sudden decrease or partial vacuum on the sewer side of a system of ventilation or plumbing has been known to break the seal in one or more single-trap closets on a line of pipe, sufficient, at least, to re-establish the equilibrium of pressure, leaving one or more openings into the sewer, to be used as exit for the sewergas, which thus enters the room wherein the fixture is situated.

This is one of the many reasons why the double-trap closet has been favored. With two traps between the closet and the sewer,

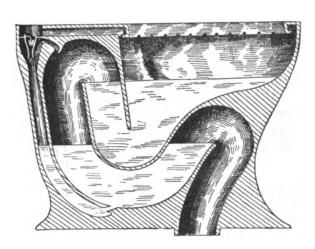
connecting the air-space and the lower trap, whence it is discharged into the sewer and thus finally disposed of.

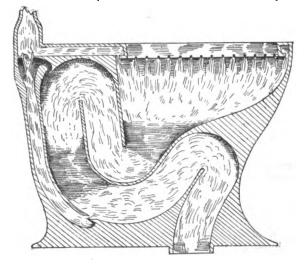
Hence, it follows that not only does the Venito provide the much-sought-for protection in the double-trap closets, but it also ensures automatic and positive ventilation of the room in which the closet is located, as without the removal of the air the closet cannot be operated.

A hotel or other large building requiring a number of closets, and, consequently, having one or more constantly in use, is thus continually provided with a pure-air supply more certain by far than any system of ventilation relying on atmospheric conditions for its success.

Each Venito Closet, in a word, is provided with an automatic ventilating device, operated by water-pressure each time the closet is used, removing at every operation at least one cubic foot of contaminated air from the structure in which it is located, which air must be and is replaced by Nature, with its equivalent of pure air.

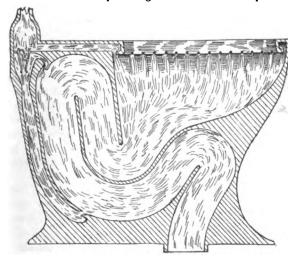
The Venito is the first and only closet of





entering into the construction of a modern preserve the water seal, which is, after all has edifice, be it office-building, hotel or residence, whatever the estimated cost may be.

Plumbing and ventilation have become of such mutual importance that they now go hand in hand, and the question always to the front is, Are the plumbing and ventilation trap closet. The air between the traps be-



perfect? Among the most important of the many items to be considered in the plumbing object is achieved, the closet being operated branch is that of water-closets, and what a change has taken place in a few years!

From the pan-closet of ten years ago we have gone successively through the plunger, the closet, the foul air, once the tank is started, the hopper, the washout and the syphon-jet experiments, neither of which have fulfilled by the operation of the closet into the duct

most important of the many considerations | will take up the variations of pressure and | its kind to be placed on the market, is the been considered, the best possible safeguard against sewer-gas, and to preserve which is the paramount object of all plumbing.

But this air-space, so essential to safety, is the very objection to the ordinary double-

> comes contaminated by contact with the fouled water; the closet cannot be operated without its removal; it will not be compressed, or rather cannot be removed from the closet in a compressed state; to draw it up into the tank means its discharge into the room by the way of the flushpipe and flushing-rim of the closet, and what is gained in safety against variation in pressure is lost by the impossibility to dispose of the air when the closet is used.

To finally dispose of the air between the traps has been the dream of every closet enthusiast, and has been the subject of many experiments.

In the Venito Pneumatic-jet Closet this by the very removal of the foul air in question, which is discharged directly into the sewer through the lower trap with the water from never reaching the upper trap, being drawn result of years of experiment, and is now and has been for over two years in successful operation.

It is now placed on the market in perfect condition, guaranteed to do its work faithfully and well, if it be permitted to apply such a term to an inanimate piece of clay.

Illustrated and descriptive catalogue will be cheerfully furnished and further information gladly and promptly supplied by the inventor and manufacturer.

> C. H. MUCKENHIRN, DETROIT, MICH.

WORLD'S FAIR MEDALS.

ONE of the most comprehensive exhibits at the World's Fair was that of A. H. Andrews & Company, the well-known Chicago manufacturers of high-grade bank and office furniture, opera-chairs, etc. Messrs. Andrews & Co. prepared for the Exposition six exhibits for bank and office furniture, folding-beds, opera-chairs, metal chairs and lumber dry kiln. On each one of these they received an award of a medal and a diploma. The bank exhibit consists of the counter and furniture of the World's Fair Bank in the Administration Building. The folding-beds, opera-chairs and metal chairs were installed in the Company's booth in the Manufactures Building. The lumber dry-kiln was a part of the Forestry exhibit.

The World's Fair Bank was one of the



NOT ONLY SHINGLES

is best colored and preserved by



CABOT'S CREOSOTE SHINGLE STA

Windmill-towers, fences, barns and out-buildings, and all undressed lumber look better and wear better if Creosote Stained than if painted, and the staining will cost not more than half as much, either to buy or to apply. It is a very good plan to stain the Interior of barns, stables and pens, for not only does the Creosote prevent the decay of the wood, but it is a strong antiseptic and insecticide, and will help to keep the building wholesome and free from worms and insects. Any boy can apply them.

Send for Samples on Wood, and Watercolor reproductions giving Color Schemes.

SAMUEL CABOT, - Sole Manufacturer,

Agents at all Central Points.

70 Kilby Street, BOSTON, MASS.

comparatively few exhibits at the Columbian Exposition that was built for actual

The award to the Andrews Folding-beds was based on their thorough construction, simple plan and consequent durability. The adjustable cable-supporting mattress is supplied with each bed.

Of the Andrews Opera-chairs it is perhaps sufficient to say that the highest perfection in theatre and church seating has been reached in them. The Andrews Assembly chairs are found in the finest churches in the land. More than 100,000 Andrews chairs are sold annually.

The Andrews Metal Chairs also received an award and a diploma for special excellence. These chairs are a comparatively new invention and are an ingenious adaptation of twisted wire into the form of a beautiful, strong and comfortable chair. They are practically indestructible, light, with highlypolished finish in brass, antique copper or nickel, with wood, leather or plush seat. Various adaptations of the simple chair have been made, including an adjustable spring-back chair for pianists and type-

The Andrews Dry-Kiln was judged worthy of an award for its fireproof qualities; for its progressive system of heating; even circulation of heat without aid of blower or chimney; controlling condensation of moisture, leaving surface of lumber moist until all humidity is driven from interior; economy of heat.

A. H. ANDREWS & CO., CHICAGO, ILL.

A SUCCESSFUL BOILER.

illustrates several things - the excellence of their apparatus and the intelligence which cess that this apparatus has met with as proved by the large popular demand for it, for another thing, and, for a third, the fact that the "markets of the world" are wide open to American enterprise.

Their excellent publication "Steam"which is far more than a mere trade-catalogue. since it is largely a treatise on the qualities and application of steam, considered abstractly as a motive force - has long been in the hands of architects and others whose duties compel them to have some positive and practical knowledge as to the ways and means of generating and using steam.

To prepare such a work and then give it away must have called for an investment of capital that many solvent and even opulent houses would shrink from.

This book naturally was prepared and published in English, but, not satisfied with this, the Babcock & Wilcox Co. have just issued their new edition in three separate and identical parts, one in English, one in French and the third in German.

Of course, the French and German editions are intended for distribution in the foreign market. Yet, nevertheless, we advise American architects to try to procure from the manufacturers the book in its three parts, for it offers an admirable chance to acquire a familiarity with French and German technical terms without much difficulty, since the English original is always at hand to be used as a "pony."

NOTES.

The Babcock & Wilcox Co., of New York, | have issued a pamphlet "Heat Insulation and have done a really extraordinary thing which | Fire Protection in Prominent Buildings," | work.

in the preparation of which the best artistic and mechanical skill has been employed, and has perfected it for one thing, the great suc- it has been spoken of as one of the finest pieces of printing ever issued in New York. The buildings illustrated as employing their coverings will suggest the class of their patrons. The publication is being widely distributed among architects and others interested in non-conducting materials.

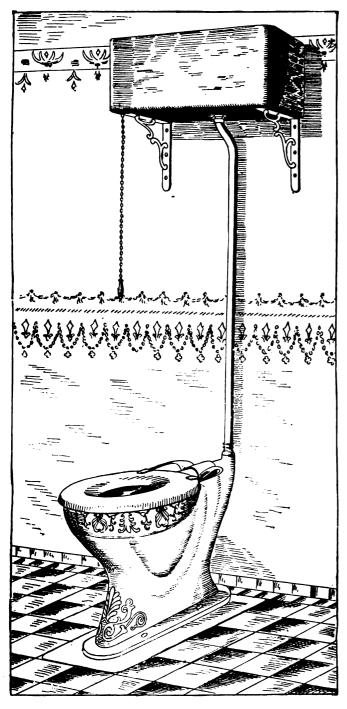
> Altogether it is a souvenir of some of the finest architectural structures in the United States, and well worth preserving. A copy will be furnished to any one, without charge, on application to them.

THE F. O. Norton Cement has such a wellestablished reputation, that the leading architects and engineers throughout the country are in the habit of naming it as the cement required in their first-class work. Perhaps the best evidence of its value for all classes of work may be gathered from the fact that it is frequently used instead of Portland cement in bridge and heavy building foundations. A large bridge at Woonsocket, R. I., has just been completed, wherein the "Norton" brand was exclusively used in concrete foundations. This is also true of many other bridges, notably so of the Brooklyn Bridge which stands entirely on the "F. O. Norton" cement concrete.

ADVICES have been received at the American office of the Compagnie Générale des-Asphaltes de France (35 Broadway, New York), that the Company has received the highest Gold Medal prize at the International Exhibitions, at both Lyons and Antwerp. THE H. W. Johns Manufacturing Co. | for superiority in quality of their Seyssel and Mons Asphaltes and for excellence of



ENITO"



An Entirely New Double-Trap Syphon Closet.

The air is completely removed from between the two traps and discharged into the sewer with water. No air is drawn into the flush pipe. There is no refill from the up-leg of the closet, but a fresh and clean seal is left in both The room is ventilated every time the closet is used.

See the seat attachment?

GRACEFUL, STRONG. and CLEAN.

the most perfect sanitary fixture on the market.

WRITE FOR CATALOGUE AND PRICES.

C. H. MUCKENHIRN, Detroit, Mich.

DUBOIS & DARROW,

EASTERN SELLING AGENTS,

61-63 Cold Street,

NEW YORK.

THE Gurney Heater Manufacturing Co., of Boston, shrewdly remarks that "an Arabian horse with a mule's head and a zebra's tail isn't an Arabian horse," and that if architects hope to get from the Gurney apparatus all it is capable of doing, they must use with it the appropriate radiators.

THE catalogue of the Wheeling Corrugating Co., of Wheeling, W. Va., shows a number of designs of real delicacy and excellence as amongst the stock patterns of their steel ceilings, which any architect can procure on short notice.

BUILDING INTELLIGENCE.

Reported for the American Architect & Building Name

ALTERATIONS AND ADDITIONS.

Boston, Mass. — Bowdoin St., cor. Cambridge St., West End, the first floor of brick dwells. to be con-

BUILDING INTELLIGENCE.

(Alterations and Additions Continued.) verted into stores; own., Benj. F. Shattuck; arch., S. D. Kelly.

Buffalo, N. Y. - Oak St., No. 264, three-st'y brick addition to Turn Hall; \$7,500; own., Buffalo Turn Vereir; arch, August Esenwein; bld., Watson & McGinnis.

Chicago, III. — Carden Malting Co., brick elevator addition, 97 Hickory St.; \$3.000.

John R. Hoxie, three-st'y brick addition and alterations, 4440 Michigan Ave.; \$30,000.

C. Hotchkiss, 2 brick stories additional, 1608 Madison St.; \$3,000.

Mrs. Jessie Woodruff, one-st'y brick addition, 395
North California Ave.; \$3,000.

Cincinnati, O. — Vine St., No. 246, remodelling brick building; \$10,000; own., G. W. Schuler; arch., G. W. Drach.

Drach.

Lockport, N. Y. — Stone, 40' x 60', addition, 25' high; own., Holly Mfg. Co; con., W. F. Huston.

New Yerk, N. Y. — East Twelfth St., No. 115, threest'y brick dwell., 20' x 52', 46' high, to be extended 20' x 43', 81' high with internal alterations; \$5,000; own., Acosta Nichols, 42 West 9th St.; arch., Buchman & Deisler, 11 East 59th St.

Fifth Ave., No. 115, seven-st'y brick store, 371' x 84' to have extensive internal alterations; \$10,000; own., Estate of Henrietta Constable, 9 East 83d St.; arch., Wm. Schickel & Co., 246 Fifth Ave.

BUILDING INTELLIGENCE.

(Alterations and Additions Continued.)

(Alterations and Additions Continued.)

Park Ave., n w cor. 59th St. four-st'y brick dwell.
20' x 65', 55' high to be extended on the front 20' x
10', 17' high with interior alterations; \$5,000; own.,
Elizabeth A. Solor, 968 Park Ave.; arch., M. V. B.
Ferdon, 1760 Broadway.

One Hundred and Twenty-sixth St., s e cor. 8th
Ave., seven-st'y brick hotel, 50' x 100', 80' high, to be
altered internally; \$4,000; own., Seth M. Milliken,
79 Leonard St.; arch., Warren & Burhorn, 136 Liberty St., s e cor. Washington St., seven-st'y
brick office, 72' x 111', 90' high, to be altered internally; \$6,000; own., C. F. Hoffman, 31 West 72d St.;
arch., Clinton & Russell, 32 Nassau St.

West Neventy-seventh St., No. 208, three-st'y brick
stable, 25' x 102', 39' high, to be raised on the rear
with internal alterations; \$5,000; own., M. Guggen
heimer & Son, 41 Cedar St.; arch., Van Campen
Taylor. 183 West Union Sq.
Philadelphia, Pa — Union Sl., s w cor. Front St,
interior alterations to church for reading-room;
con., Henry C., Dahl, 404 South 5th St.

Columbia Ave., No. 619, three-st'y brick addition
to dwell.; con., John M. Whelan, 240 Glenwood
Ave.

Serygeant St., s e cor. Jasper St., three-st'y brick



PORTLANI

is the strongest and most serviceable Cement made, and will permit the admixture of a larger amount of sand or gravel with less loss of strength than any other brand; it is therefore the most economical. It is the finest ground cement made, and has the largest bulk to the barrel.

The following test, made in actual work, by Col. D. C. Houston, Corps of Engineers, U. S. A., at the sea wall around Governor's Island, New York Harbor, has never been equalled by any other cement. It is as follows: Tensile strength per square inch, one day, 384 pounds; seven days, 600 pounds; thirty days, 818 pounds.

For Sidewalks it gives the best color, and the most endurable wearing surface. Most of the prominent Railroad Bridges and the large Office Buildings of the country stand upon a foundation of concrete made of ALSEN'S CEMENT.

Alsen's Portland Cement Works, New York Office, 143 Liberty Street.

BUILDING INTELLIGENCE

(Alterations and Additions Continued.) interior alterations to two-st'y brick market-house; own., H. L. Haus; con., J. England & Bro., 2217

South 4th St.

Locust St., n w cor. 40th St., 3 three-st'y brick back buildings, 20' x 25'; own., John H. Rose, 232

South 40th St.

Passyunk Ape., Ko. 1913, two-st'y brick and stone back bu Iding: bld., John O'Connor, Dickinson St., 8 w cor. 18th St.

Chestnut St., No. 1408, interior alterations and new front; estimates are being made for the work; own., Citizens Trust and Surety Co.; arch., W. E. Jackson, 927 Chestnut St.

South Nineteenth St., No. 114, all plans have been completed for alterations to the four-st'y dwell, of John L. Clawson and plans placed on boards for estimates. They call for a front of Pompeilan brick and stone, slate roof; arch., Day & Coates, 910 Drexel Building.

Collingawood, N. J.—Six dwells, will be built for Wm. S. Darnell; con., Forman & Littleton. Far Hills, N. J.—Two sty and attic stone and frame dwell, shingle roof; own., John T. Dillon; arch., Boring & Tinton, 57 Broadway, New York City.

Frankford, Pa. - Sellers St., 8 w cor. Leiper St., 3 two-st'y brick dwells.; own., Wm. M. France, 1356 two-st'y bi Sellers St.

Jenkintown, Pa. - Three-st'y brick, frame and stone dwell.; own., John Pems Brock; arch., Baker & Dallett, Walnut St., s w cor. 5th Sts., Philadel-phia, Pa.

phia, Pa.

Madison, N. J.—Two-st'y frame dwell.; about \$7,000; arch., Boring & Tilton, 57 Broadway, New York City, N. Y.; own., Dennis Wilder.

Two-st'y stone and frame dwell.; about \$6,000; arch., Boring & Tilton, 57 Broadway, New York City, N. Y.; own., K. C. Hollander.

Montclair, N. J.—Plans for a frame dwell. have been prepared by J. H. Lockwood to be erected for M. S. Wright at a cost of about \$6,000.

Morristown, N. J. – Two-st'y and attic dwell., 35' x 50'; own., M. Harriman; arch., R. E. Walsh.

Morristown, N. J.—Two-st'y and attic dwell., 35' x 50'; own., M. Harriman; arch., R. E. Walsh.

New York, N. Y.—Prospect Arc., e s, 25' s Elsemere Pl., three-st'y brick and frame dwell., 20' x 40', 35' high, peak shingle roof; \$3 500; own., Thomas Fells, 30 Henry St.; arch., T. J. Blair, 1602 Clinton Ave.

One Hundred and Fiftieth St., n s, 125' w Morris Ave., three-st'y brick and frame dwell., 22' x 50', 34' high, flat tin roof; \$3,800; own., Thomas Harrigan, 473 East 150th St.; arch., Hiram Horenberger, 682 East 159th St.

Second Acc., e s, 327' n Highbridge St., three-st'y brick and frame dwell., 22' x 32', 39' high, flat and peak tin and shingle roof; \$4,000; own., Wm. H. Odell, Clairmont Ave., High Bridge; arch., George M. Walgrove, 99 Nassau St.

South St., n s, 430' e Palisade Ave., three-st'y brick and frame dwell., 52' x 43', 40' high, mansard shingle and tin roof; \$9,500; own., Margaret F. Combs, Riverdale; arch., Raleigh C. Gilder, 82' Broadway.

Washington Acc., e s, 376' n 169th St., three-st'y brick dwell, 22' x 52', 45' high, flat tin roof; \$10,000; own., T. F. Ganan, 50 Albany St.; arch., T. J. Miller & Co., 727 East 1634 St.

Eighty-ighth St., s s, 522' e Amsterdam Ave., 3 three-st'y brick dwells., 17' x 18' x 52', 40' high, flat tin roof; \$15.00; own., James B. Gillis, 144 West 88th St.; arch., Neville & Bagge, 274 West 119th St.

Norwood, O. — Frame dwell.; \$7,000; own., A. Percy Hoor; arch., Des Jardins & Havward. Cincinnati.

tim roots; \$1,00°; own., James B. Gillis, 144 West 88th St.; arch., Neville & Bagge, 274 West 119th St. Norwood, O. — Frame dwell.; \$7,000; own., A. Percy Hoor; arch., Des Jardins & Hayward, Cincinnati. Philadelphia, Pa. — Cumberland St., s., e 27th St., 3 two-st'y brick dwells. and stable; own., L. A. Hubbs, 2412 North 30th St. Cumberland St., n., 160° e 27th St., two-st'y brick dwell. with back building; con., Thomas Nelson, 2402 Showaker St.; own., Samuel Stubbs. Fifteenth St., e., n. Westmoreland St., 10 two-st'y brick and stone dwells. with back buildings; own., George W. Zane, 2127 Camae St. Curlisle St., w. s., n. Westmoreland St., 10 two-st'y brick and stone dwells.; own., George W. Zane, 2127 Camae St. North Sixth St., Nos. 3021-3023, 2 two-st'y brick dwells. with back buildings; own., William Bechman, 1215 Susquehanna Ave.

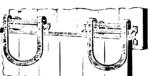
Breester St., s., s., e. 20th St., 16 two-st'y brick dwells. with back buildings; bid., D. R. Crane, 3343 Uber St.

Girard Are., s.s., 108' w 41st St., 6 three-st'y brick dwells. 17' x 35½', with back buildings, 13½' x 20'; own., Field & Metzger, 905 North 42d St.

Brooks, Shoobridge & Co.

7 BOWLING GREEN. NEW YORK.

ENGLISH PORTLAND CEMENT.



LANE'S Patent Steel Barn Door Hanger.

ANTI-FRICTION. MOST COMPLETE IN CONSTRUCTION. MATERIAL THE BEST. NO BREAKAGE. Ease of Movement. Always in Order.

LANE'S Patent Noiseless Steel Parlor Door Hanger. Hanger is made of steel throughout, including wheel, except solid interior leather tread, causing to roll noiselessly.

Single steel track instead of double wood rail. Ask your Hardware dealer, and send for Circular.

Manufactured by LANE BROTHERS, Poughkeepsie, N. Y.

BUILDING INTELLIGENCE.

(Houses Continued.)

(Houses Continued.)

Mold St., s e and s w cor. Moore St., 6 three-st'y brick dwells. with back buildings; own., J. H. Bey-erlin, 1604 South Broad St.

Monmouth St., s e s, w Jasper St., 10 two-st'y brick dwells., including one store; own., William Schneider, 1832 Orleans St.

Ruth St., e and w s, s Monmouth St., 9 two-st'y brick dwells. with back buildings; own., William Schneider, 1832 Orleans St.

Jefferson St., n e cor. 20th St., three-st'y brick dwells. with back buildings; con., D. M. Nuneviller & Son, 2132 Sharswood St.

Wheat St., No. 1338, two-st'y brick dwell.; con., John P. Kidd, 1332 South 3d St.

Franklin St., w s, 233'n Indiana Ave., 2 two st'y brick dwells. with back buildings; own., John Mo-Bride, 1906 Hart Lane.

South Sixth St. Nos. 942-944, 2 three-st'y brick and stone dwells. with back buildings; con., Henry C. Dahl, 408 South 5th St.; own., Dr. George Polis.

Chall, 408 South 5th St.; own., Dr. George Polis.

Chall the St. St. St. St. St., 2 three-st'y Pompelian brick dwells., tile roofs; arch., P. P. Elkinton, 512 Walnut St.

Clark St., s e s, s w Leferre St., 2 two-st'y frame and brick dwells; con., Lewis Ahler, 4489 Saimon St.

Cambria St., s s below Amber St., 2 two-st'y brick

and brick dwells.; con., Lewis Ahler, 4489 Saimon St.

Cambria St., s s below Amber St., 2 two.st'y brick dwells.; own., Mathias Kerstuga, Mercy St., n e cor. Front St.

Harvey St., s s, bet. Wayne Ave. and Green St., 8 three-st'y brick and frame, shingle roof dwells.; own., Weekey, Dade & Nobie, Phil-Elena and Greene Sts.

Jefferson St., No. 303, two-st'y stone dwell.; own., Albert Cole, 295 Jefferson St.

Fairhill and Luzerne Sts., two-st'y stone and brick dwell.: con., John Miller, 3919 North 6th St.

Miffin St., No. 1336, three-st'y brick dwell. with brownstone trimmings; own., Hugh McNelle, 1944 Passyunk Ave.

Ellsworth St., No. 1347, three-st'y brick dwell.; own., Samuel Cummings; con., John G. Ruff, 619 Cherry St.

Louis, Mo.— Dwell., Park and Ewing Sts.; \$2,-

St. Louis, Mo. — Dwell., Park and Ewing Sts.; \$2,-900; own., J. Tenner; con., E. J. Roed.

Dwell., Blair and Grand Sts.; \$3,000; own. and con. E. Iddings. Dwell., Blair on., E. Iddings.

Dweil., Morgan and Sarah Sts.; \$7,000; own., Charter Oak Investment Co.; con., Thos. J. Kelly.

BUILDING INTELLIGENCE.

(Houses Continued.)

(Houses Continued.)

Dwells., Page and Pendleton Sts., \$8,000; own. and con., L. Biszant.

Dwells., Pendleton and Cook Sts.; \$8,000; own. and con., L. Biszant.

Dwells., Spring and Laclede St.; \$7,000; own. and con., L. Biszant.

Dwell., Page and Union Sts.; \$3,500; own., G. B. Morgan; con., C. A. Metune.

Dwell., Menerva and Academy Sts.; \$3,000; own. and con., Wm. Hambley.

Dwell., Codet St. and Broadway; \$3,400; own., Wm. H II; con., W. Hambley.

Dwell., Flora and Spring Sts.; \$4,500; own., G. F. Pommer; con., A. Wager.

West Chester, Pa. – South Matlock St., George Townseud and Cloyde Baldwin are each having a dwell, built; Mr. S. M. Braunstein is putting up four houses.

South Franklin St., Mifflin Rigg is building two

dwells.

South Franktin St., Chas. Warner is about to have a row of dwells. built.

Worcester, Mass. — Shattuck St., two-st'y frame dwell.; own., Ella E. Haynes; arch, W. H. Harvey; bld., E. J. Cuss.

Central Ave., one-and-one-half-st'y frame dwell.; own., H. Firmin; con., Rankin & Woodside.

Water St., one-and-one-half-st'y frame dwell.; own., B. Colton; day-work.

Green Line, two-st'y frame dwell.; own., L. A. Smith; con., H. B. Pender.

Cowan; con., D. M. Waterman.

Knight St., two-st'y frame dwell.; own., Thomas B. Cowan; con., D. M. Waterman.

Knight St., two-st'y frame dwell.; own., H. M. Knight; con., A. M. Knight.

(Vatalpa St., two-st'y frame dwell.; own., Mrs. Addie C. Durfee; arch., W. H. Harvey; con., L. N. Hall.

Columbia Park, two-st'y frame dwell.

Columbia Park, two-st'y frame dwell.; own., Wm.. Boyden; arch., W. H. Harvey; con., C. A. Col-A. Boyden; arch., W. H. Harvey, w..., burn.

Ingleside Ave., two-st'y frame dwell.; own., P. Richard; con., C. O. Blake.

Foot Market St., brick and marble

York, Pa.—East Market St, brick and marble dwell; \$20,000; own., Dr. K. L. Eisenhart; arch., J. A. Dempwolf; bld., Geo. S. Yinger.

East Market St., brick and marble dwell.; own., M. D. Martin; arch., J. A. Dempwolf; bld., Geo. S. Yinger.



TRADE SUPPLEMENT. ADVERTISERS'

.No. 150.

SATURDAY, DECEMBER 1, 1894

VOLUME XLVI.

KASPER'S SELF-ACTING OATS-CLEANER.

ONE of the most perplexing problems, as well as one of the most important questions confronting the architect in drawing plans for stables, is the cleaning of the grain for feed for the horses, without delay or unneces. sary labor.

Science and invention have made rapid strides in many directions, but in none more than in the automatic cleaning of grain for this very purpose.

The primitive method so long in vogue by the more careful grooms, though far from thorough in its results, is, at least, an attempt in the right direction.

Meanwhile, architects in getting out their plans recognized the necessity of some perfect process for cleaning the oats as they came from the bin, and thanks to the untiring efforts of the inventor, a machine for thoroughly cleaning oats has been perfected, which is welcomed with satisfaction, and is generally mentioned in specifications. It is as moderate in price as it is simple in con-

This oats-cleaner, or what may be more technically termed "Kasper's Self-Acting Oats-Cleaner for Stable Use" has become so popular already that over fourteen thousand (14,000) of them are now in use, and in every instance doing faultless work.

This appliance is the only one in the market for perfectly cleaning oats, as none can be drawn through it without being separated or purified from dirt, dust, weed-seeds or any admixture whatever, and for the general benefit of all who own horses, as well as for the health and comfort of that noble animal, no owner should neglect to inform himself fully of the value of this simple device. In his own factory all the machines are constructed under the supervision of expert mechanics, and no machine is allowed to pass from the factory to the warerooms until carefully inspected and fully tested, and no cleaner has ever been returned as unsatisfactory.

The capacity of the factory, though twice increased, is now only equal to the demand.

Mr. Whitfield has filled orders from England, Ireland, France, Germany, Cuba, Russia, Austria, Australia, Chili, Italy, India, and South Africa, and more than fourteen thousand are now in use in all parts of this country and Canada, and he has thousands of testimonials, without one complaint.

This result has been accomplished mainly through the energetic work of Mr. Whitfield n bringing his oats-cleaners to the notice ot

the public, who have not been slow to avail themselves of the benefits to be derived from the use of this most simple and perfect invention, which requires no power, operating automatically.

Owners of horses have lately become aware of the fact that thousands of animals annually come to a premature end from the amount of extraneous matter consumed with their oats.

The exhibition and operation of "Kasper's Self-Acting Oats-Cleaner" at the World's Columbian Exposition, where twenty-six (26) were in constant use by the officials, a Medal and Diploma being awarded, fairly opened their eyes, and when they realized the amount



of dirt and impurities the cleaner removed from oats supposed to be clean, they were indeed surprised, and acknowledged that there was something new under the sun.

At the salesroom of the manufacturer, Mr. Thomas Whitfield, 369 Wabash Avenue, Chicago, Ill., was recently on exhibition a Cleaner made by him for use in one of the finest stables in the City of New York.

The plan of this Cleaner did not differ materially from those heretofore made, but the materials were solid mahogany, the metal for exterior furnishings were solid brass, heavily gold-plated. This we understand is in thorough keeping with the fixtures of the stable for which it is designed, and it is certainly a strong endorsement of the practical value of the device to have it considered essential to the outfit. Illustrated and dewitched with the following results:

| Tests were then made of the strength of each of the sectional coverings in the following manner:
| Cross-sections of pieces for two-inch steam pipe one inch high were subjected to pressure until crushed to one-half inch in height in each case, with the following results: stable for which it is designed, and it is cer-

scriptive catalogue will be cheerfully furnished and further information gladly and promptly supplied by the owner and manufacturer.

THOMAS WHITFIELD,

CHICAGO, ILL.

THE MAGNESIA SECTIONAL COV-ERINGS.

WE exhibit herewith extracts from a report of a comparison of Pipe - coverings, made by Louis Schmidt, B. Sc., Analytical Chemist, of East Fourth Street, Cincinnati, Ohio, in the form of an affidavit, as we think that its publication will prove interesting to your readers and increase the general fund of useful knowledge.

Louis Schmidt being first duly sworn says: Hamilton County. SS. STATE OF OHIO

I have experimented with the different steampipe coverings sold on this market, with respect to their non-conductivity, strength, durability, etc., in the following manner:

I had constructed an apparatus with six two-inch steam pipes six feet long extending from it. It was arranged with a trap, so that dry steam went into these pipes. At the end of each six feet was a cap and a one-quarter-inch nipple and valve, by which the condensation was drawn off. Upon the four inside lines was placed six feet of the different sectional coverings to be tested. All connections were thoroughly covered. The outside lines were covered (5 and 6) so as to place all of the sectional coverings under equal conditions. I have, for convenience, numbered the samples as follows:

1. Philip Carey Manufacturing Co.'s Standard Asbestos-Magnesia Sectional Removable Pipe Covering.

ering.
2. H. W. John's Manufacturing Co.'s Asbestos-2. H. W. John's Manufacturing Co.'s Asbestos-Sponge Moulded Sectional Covering.
3. Chicago Fireproof Covering Co.'s Ideal Asbestos Moulded Covering.
4. Keasbey & Mattison Co.'s Magnesia Sectional Covering.
5. Philip Carey Manufacturing Cc.'s Asbestos Cament.

5. Philip Carey Manufacturing Cc.'s Asbestos Cement.
6. Keasbey & Mattison Co.'s Magnesia Plastic. I purchased all of the coverings on the open market from the agents of the manufacturers. Steam was turned on at midnight; the valves at the end of each six feet of the coverings were opened to allow the condensation to drip into buckets; at seven o'clock in the morning the valves were closed and the condensation was drawn off each hour until the pipes became thoroughly heated, and the quantities of water became uniform. At twelve o'clock noon, the test was started, the condensation was drawn off and measured for three consecutive hours, namely, one, two and three o'clock, with the following results:

Average steam pressure, 73 pounds. Temperature 315° Fab.

Average temperature of room 28° C, or 72.4° Tests were then made of the strength of each of

	Area.	Ultimate stress.	Pressure per sq. in.
No. 1	11 sq. ins.	660 lbs.	60 lbs.
No. 2.	11 "		113 "
		1,230 " 1,175 "	107 "
No. 3. No. 4.	11 "	2.800 "	255 "

Pieces carefully cut from the sections used in the test were subjected to pressure in the same manner, with the following results:

	Area.	Ultimate stress.	Pressure per sq. in.
No. 1. No. 2. No. 3. No. 4.	11 sq. ins. 11 " 11 "	460 lbs. 480 " 360 " 2,800 "	42 lbs. 43.5 " 32.7 " 255.0 "

The coverings were only on the steam pipes teen hours. Number 4 stood the same pressure fifteen hours. Number 4 stood the same pressure after as before.

Pieces of each were soaked in water for three

weeks:
1. Softened and disintegrated.
2. Disintegrated completely.
3. Less rigid than No. 1, more rigid than

3. Less rigid than Ao. .,

No 2.

4. Remained rigid.

A sample of each covering was then taken from the pipe, and an analysis made thereof, yielding the following results:

	No. 1.	No. 2.	No. 3.	No. 4.
Moisture	8.28% 4.73% 0.52% 86.37% Trace.	1.21% 90.97%	7.36% 5.47% 5.75% 81.42% Trace.	2 65% None.

This report was made for the purpose of finding out the true relation which each covering bears to the others in non-conducting qualities, strength, etc. Having purchased all of the coverings in person in the open market, insured representative samples of the material as sold by the manufacturers.

The coverings above mentioned were applied in my presence, in this way insuring an impartial test of all coverings under like conditions.

Louis Schmidt.

Sworn to and subscribed before me this 21st day of September, 1894.

JAS. R. FORAKER. Notary Public in and for Hamilton County, O.

We think that the tables of "Structural Strength" and "Composition" are highly important.

S. C. NIGHTINGALE & CHILDS, 134 PEARL St., BOSTON, MASS.

PRESSED AND ENAMELLED BRICK.

THE Tiffany Pressed Brick Company of Chicago desires to call attention to the following recent endorsement of the quality of their Enamelled Brick.

(COPY)

CHICAGO, November 2, 1894.

J. VAN INWAGEN, Esq., President Tiffany Pressed Brick Company.

Dear Sir, - We have used about 160,000 your American Manufactured Enamelled Brick (English size) in the Marquette Building, the largest and most expensive office-building in the West. They have proved very satisfactory as to quality, finish, etc., and we believe them to be equal to those of the best English manufacture. Yours truly,

GEORGE A. FULLER COMPAN Per GEORGE A. FULLER, President.

SEAMLESS TUBING.

UNITED STATES: DEPARTMENT E, MINES AND MINING. 22629.

EXHIBITOR — Randolph & Clowes. Advess Waterbury, Conn. Group 51. Class 342.

EXHIBIT — Seamless Drawn Copper Tubes. Brazed Brass Tubes. Sheet Copper.

AWARD.

Seamless Drawn Copper Tubes. - Very admirable workmanship; manufacture of seam-less cold-drawn tubes of brass and of copper of most extraordinary size. They consist of many seamless, drawn-brass and copper tubes, from one-eighth-inch to sixteen inches inside diameter, and up to forty feet long; also shells for dynamite, up to fourteen inches diameter, and seamless cold drawn copper boilers up to sixteen inches in diameter and sixty gallons in capacity.

Brazed Brass Tubes. - A great variety of pretty patterns of variegated brass and copper tubing and moulding, and successfully overcoming serious technical difficulties making them. It consists of a great number and variety of variegated copper and brass brazed tubings and mouldings. The patterns are attractive, and many involve considerable technical difficulty. The variegated and irregular tubing is made by rolling a brazed in the march of improvement, we hereby

plain tube at a single pass, between rolls which have the variegated pattern cut into their surfaces, while a mandrel inside the tube carrying irregularly shaped rolls, forces the copper or brass tubing into the recesses in main rolls, which are outside the tube.

Sheet Copper. — A very striking installa-tion, and educational value of a large collection of sheet and spun brass and copper, and of copper and brass tubing very strikingly installed.

Signed by Judges and Chairmen of Executive Committee on Awards.

> UNITED STATES: DEPARTMENT H, MANUFACTURES. 7271.

EXHIBITOR - Randolph & Clowes. Address Waterbury, Conn. Group 120. Class 756.

EXHIBIT - Boilers, and Brass and Copper Kettles.

AWARD.

Superior quality of material, great strength in construction and fine finish.

Signed by Judges and Chairmen of Executive Committee on Awards.

CORRESPONDENCE SCHOOLS.

WE mentioned last month the receipt of a number of publications relating to the "Correspondence Schools," at Scranton, Pa.; among these, and of most interest, are a large number of letters, nearly two hundred, written by students in respect to their experience and opinions of the system. It is the most original agency for technical education that has ever been devised, capable of an extension that has no visible limit, and portends a time when we will not set off a few of the most fortunate for education, but educate all up to the limits required in the application of the skilled arts. One effect will be to raise the standard of the ordinary courses in technical colleges and schools, because mediocrity can be attained at a tithe of the expense, and in ways more congenial to most students.

The habit of writing out exercises is a good one, good in all kinds of mnemonic effort, and when to this is added the interest of a communication personally addressed, and the environment of a home, it is easy to discern the attraction of a correspondence sys-

Among the papers mentioned is one sheet of examples in hydraulics, that as a collection of educational problems is the best we have ever seen. When a set school-book is done, and the plates made, there is an end, but in the present system a tentative course is possible. Change and improvement can go on continually; not only this, the problems submitted can be nicely graded to the requirement and capacity of the student, and can, by the facility for change, be made relevant to particular examples or practice. Industry, San Francisco, Cal., Oct., 1894.

VITRIFIED EARTHENWARE.

VITRIFIED Earthenware is made by so mixing the material that in the process of firing, the glaze and the clay become thoroughly fused or melted together, making the body of equal density all the way through, and absolutely impermeable to water or acids, securing great strength and positive immunity from crazing or crackling, insuring durability and consequently adding immensely to the value, while only moderately enhancing the cost, and has been adopted, and is now being called for by the U.S. Government. We firmly believe that Vitrified Ware (because it is better) will surely supersede the common ware (whether imported or domestic) for sanitary goods, water-closets, urinals, wash-basins, etc.; and

announce the fact that we are now prepared to receive orders for our specialties made of this material, assuring our patrons that the superior quality of the goods will more than compensate for the slight advance in the cost. We are confident that architects will appreciate the advantages to be gained by the use of Vitrified Earthenware, and take pleasure in extending a cordial invitation to

call and examine samples.

As evidence as to how Vitrified Chinaware is regarded in Government circles, we reprint the following:

[Extract from Army and Navy Register, June 2, 1894, page 263.1

AMERICAN VITRIFIED POTTERY.

The American Vitrified Pottery is a hard, strong impervious material of a fine white color, combining in a high degree all the qualities necessary to make it an ideal material to be used in the manufacture of sanitary plumbing fixtures.

The production of this ware is a triumph for the American manufacturers, and the credit is due Mr. James H. Lyons, of the Keystone Pottery Company of Trenton, N. J., as being the first to place on the market a class of pottery for the manufacture of plumbing specialties that is fully equal in every respect to the ware which has heretofore been held as the standard by sanitary engineers.

A perfect sanitary fixture must be entirely non absorbert under all conditions, and

tirely non-absorbent under all conditions, and not dependent for its protection on a glaze, which will crack or craze.

A number of tests to demonstrate the superiority of the Vitrified Pottery over the places. In these tests two pieces of the same size, one of the ordinary and the other of the Vitrified Pottery were selected, weighed and immersed in water. At the end of twenty-four hours, the test pieces were taken out of the water and weighed by a delicate pair of scales. The ordinary pottery had pair of scates. The ordinary pottery had absorbed its own weight of water, while no increased weight could be detected in the vitrified. The strength of the vitrified was found to be about twice that of the ordinary pottery. This point alone strongly commends vitrified ware to the attention of our Army pottery. This point alone strongly commends vitrified ware to the attention of our Army

and Navy experts.

The Vitrified Sanitary Ware sold by Fred Adee & Co. is made by the Keystone Pottery Co.

FRED ADEE & CO. 90 BREKMAN STREET, N. Y.

DESCRIPTION OF BOYLE'S PNEU-MATIC WATER-CLOSET.¹

DURING the past fifteen or twenty years the attention of sanitary engineers and of plumbers has been directed towards improvements in water-closets more than to those of almost any other sanitary device connected with the house-drainage system. Boyle maintained that a perfect water-closet should meet all the following requirements:

- 1. It should be simple and durable in construction.
- 2. Its flushing should be easy, quick, thorough and noiseless.
- 3. It should at all times, even during the period of flushing, maintain a perfect waterseal or barrier against sewer gas.
- 4. It should be economical in its use of water.
- 5. It should be compact, convenient, and, as far as possible, ornate.
- 6. Its bowl should be ventilated so as to carry off bad odors.
- 7. Any accident or faulty construction endangering the house from sewer gas should at once be patent.
- 8. It should contain a sufficient quantity of water in its bowl to receive deposited matter.
- 9. Its trap or traps should be effectively guarded against evaporations, in order that the water-seal should not be evaporated too rapidly.

Written by Dr. Cyrus Edson, Commissioner of Health for the State and City of New York. (Continued on page 4.)



MEDAL AND DIPLOMA

awarded the

KASPER SELF-ACTING OATS CLEANER,

by the

WORLD'S COLUMBIAN EXPOSITION.

IN USE IN OVER 14,000 STABLES.



A STARTLING FACT

That many valuable horses have been permanently injured by being fed oats which had been considered clean when put into the bin. AVOID THIS POSSIBILITY By using a

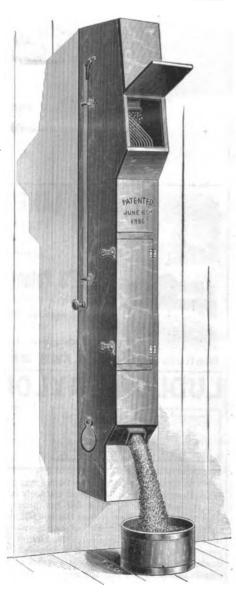
KASPER SELFCTING OATS CLEANER

Which thoroughly removes all dirt and impurities, not only protecting the health of your animals but proving

A PAYING INVESTMENT.

A saving of from one to two quarts of oats per day on every horse is accomplished. TRY ONE AND BE CONVINCED.







It is a device that every horse owner should have, and certainly would not be without, after knowing its merits.

SEND FOR ONE

on approval, and its value will be demonstrated in a short time to your entire satisfaction. If it is not, return the cleaner at my expense.

Send for Descriptive Circular and Price List, containing names and testimonials of prominent parties who have tried the machine, and whose names and reputation emphasize their recommendation.



Cleaners are shipped ready to put up, which any one can easily do.

THOMAS WHITFIELD,

Sole Owner and Manufacturer, - 369 Wabash Avenue, Chicago, Ill.

ANY IMITATION OR INFRINCEMENT OF THIS PATENT WILL BE PROMPTLY PROSECUTED.

AGENTS WANTED IN EVERY TOWN AND CITY,

Digitized by Google

is the strongest and most serviceable Cement made, and will permit the admixture of a larger amount of sand or gravel with less loss of strength than any other brand; it is therefore the most economical. It is the finest ground cement made, and has the largest bulk to the barrel.

The following test, made in actual work, by Col. D. C. HOUSTON, Corps of Engineers, U. S. A., at the sea wall around Governor's Island, New York Harbor, has never been equalled by any other cement. It is as follows: Tensile strength per square inch, one day, 384 pounds; seven days, 600 pounds; thirty days, 818 pounds.

For Sidewalks it gives the best color, and the most endurable wearing surface. Most of the prominent Railroad Bridges and the large Office Buildings of the country stand upon a foundation of concrete made of ALSEN'S CEMENT.

Alsen's Portland Cement Works, New York Office, 143 Liberty Street.

After much patient work, he devised the Pneumatic Closet, which is to-day, one of the most perfect in use; indeed, it will be almost impossible to discover a point in the Pneumatic Closet that is open to improvement.

The so-called washout closets are open to iticism. These have a shallow bowl which criticism. These have a shallow bowl which contains insufficient water to receive and deoderize the dejecta, and are flushed by a strong stream of water which carries out the contained material into a shallow trap formed in the lower part of the fixture. This closet is noisy and apt to splatter during its action; it flushes ineffectively, and easily fouls the surface about the outlet of the bowl. The trap is not easily accessible, and the floorjoint may leak and admit the passage of air from the soil-pipe into the house without the fact of leakage being noticeable.

The syphon-jet closets have but a single

ater-seal, and the latter is liable to be brok during the operation of flushing. These closets are apt to waste water to an enormous extent, as water must be used not alone for the flush, but also for the operation of the jet. If their joints become ineffective, the escape of sewer-gas may take place through defects that may not be apparent. The emptying of slops into the bowl will start a syphon, thus reducing the water-seal to about one-half inch and rendering it ineffective and liable to be

broken by evaporation.

In 1882, Boyle applied the pneumatic principle to the double-trapped closet. His system of the control tem provides for a large, deep water-seal contained in the bowl and an additional trap of effective sealage below it; between the two seals is contained an air-space. The watersupply tank or cistern is an essential part of the mechanism, and shows great ingenuity. By means of a simple arrangement of connect ing tubes, the fall of water during the period of flushing is utilized to create a partial vacuum in the air-space between the two traps. This vacuum sucks the water from the bowl-trap and thus starts the syphonic action which, with the flush, thoroughly cleanses the bowl. At the proper moment the syphonic action is broken and the bowl filled to the level of its seal. The inter-trap air-space and the bowl are provided with an excellent ventilating device, which is connected with the nearest air-flue (preferably hot air) in the house. The flushing device also forms an important part of the ventilating arrangement

One of the most praiseworthy things about Boyle's closet is the fact that to ensure its working the floor-joint formed between the closet proper and the soil-pipe must be abso-lutely air-tight.

this joint leaks in the slightest degree, the fact is at once apparent, for the closet

cannot be operated.

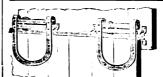
At this floor-joint, or the joint between the closet proper and the soil-pipe of the house, is usually the weakest part of a water-closet; the importance of having defects in it made at once patent cannot be over-estimated.

The two seals utilized by Boyle for the protection of his invention cannot under any conditions that may occur in the position in which they are placed, be broken. Of course, if a closet should remain in disuse for a long period of time, the seals would evaporate, an accident to which all water-seals are liable.



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ANE'S Patent Steel Barn Door Hanger.

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Boyle applied natural laws to the working of his device; he simply chained nature's laws them to work for his purpose The test of time has proved the wisdom and thoroughness of his inventive genius and the soundness of his principles. His inventions present an illustration of the refinements of modern plumbing and the great number of his closets in use shows that the more enlightened of the community fully appreciate the neces sity of extreme safeguards against sewer-gas.

THE HENRY HUBER COMPANY, NEW YORK, N. Y.

NOTES.

MR. A. E. W. PAINTER, one of the iron kings of Pennsylvania, and a man of large influence, is about to erect a memorial window in St. Paul's Church, Troy, Rev. Dr. Enos, pastor; this church having been recently entirely reconstructed and filled with cently entirely reconstructed and filled with many works of art, by the money which was given by the most prominent citizens of Troy, especially those connected with the stove industries, the Warrens, Tillinghasts, etc. Mr.

we believe it would be worth an architect's while to send a representative to our studios on Monday, between the hours of 9 A. M. and 4 P. M., to inspect this window. The window is extremely large, and represents St. John on the Island of Patmos writing the Apocalypse, surrounded by a host of angels, etc.

TIFFANY GLASS & DECORATING COMPANY.
NEW YORK, N. Y.

THE Ceramic Mosaic for the "Marquette" Building, corner Adams and Dearborn Streets, Chicago, has been sub-let by the contractors, Messrs. Geo. A. Fuller & Co., of Chicago, to the Chicago Interior Decorating Company of the same city. The estimated cost is about \$40,000. The work is to be completed by March 1, 1895.

THE attractive little catalogue just issued by I. P. Frink will be found of very great service to an architect at the time when he is considering how he shall light his public or semi-public rooms. It shows not only a great variety of chandelier burners and reflectors in Painter's memorial was designed by that very clever artist, Mr. J. A. Holzer, and is made very largely of "Tiffany Favrile Glass," an entirely new departure in glass work; hence, for a special purpose.





